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Bulletin

WE GUESSED WRONG

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Octavo of 881 pages. By OLIVER T. OSBORNE, M.D., Professor of Therapeutics, Department of Medicine, Yale University. Cloth, $7.00 net

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MULTIPLE MALIGNANT NEOPLASMS *

LEONARD J. OWEN, M.D.

ST. LOUIS

There are some types of neoplasms in which multiplicity of primary foci of growth is the usual finding or is quite common. The types most usually displaying this characteristic are benign growths or those showing only a little tendency toward malignant degeneration. Many of the malignant tumors do, however, display this characteristic, and probably more frequently than is commonly supposed. Ewing [1] describes this tendency of multiple foci of growth in various malignant tumors.

A survey of the literature on this subject since 1910 revealed comparatively few articles, and in some of these the phrase "multiple carcinoma" was applied in cases of multiple metastases from a primary growth. A series of 200 cases of basal cell cancers, the type most commonly appearing as multiple growths, was reported by Barber [2] in 1915. Adamson [3] reported a case in which he speaks of and describes zoniform distribution of multiple basal cell carcinomas. In 1914, Plass [4] reported the fatal termination of a case in which he described multiple primary carcinomas. Richards [5] reported a case of interest in this connection in which there was noted cancer of the tonsil, and sarcoma of the scapula. Savatard [6] describes the recurrence of prickle cell cancers of the face. He describes the occurrence of prickle cell growth on a lupus base and states that he has never seen a basal cell cancer of such origin. One of my cases listed under Group 1 of this paper presents that condition.

There is a rather voluminous literature about two types of cancer that are multiple; cancer of the coal tar workers, and that associated with xeroderma pigmentosa. Since these have been so well described they will not be mentioned further in this paper.

The cases recorded here are those in which there were observed multiple malignant growths either of the same type or of different types. In the majority of cases the neoplasms were simultaneously present, though in some cases there was a sequence of development, the first growths having been successfully treated. Care was taken in the latter cases to rule out those in which there was the possibility that the second growth was a recurrence, or what might be more accurately termed a neoplastic recidive. The recording of metastatic growths was also guarded against. Several cases that had been recorded as multiple melanosarcoma were excluded on this basis.

Three thousand cases of malignancy were reviewed, and 143, or 4.7 per cent., of cases of multiple growths collected. In all cases possible a study of the pathology of the tissues was made, and of the cases in which this was not possible only those in which a definite clinical diagnosis could be made were included. For convenience of description the cases are grouped according to the types, or association of types present.

GROUP 1. BASAL CELL CARCINOMAS

The basal cell type of the squamous cell cancers is by far the most common of the multiple malignancies, and probably occurs more frequently than is indicated by the eighty-six cases collected. The site is nearly always on exposed areas of skin, and thus this disease is more prone to occur in persons whose occupation keeps them outdoors. Twenty-five per cent. of cases occurred in farmers. The distribution as to sex was fifty-five cases, 65 per cent. in males, and thirty cases, 35 per cent. in females. The history of duration of the disease ranged from six months to thirty-eight years, the average being eight years. The extremes of age of the patients were 22 years in the youngest and 89 years in the oldest. The average age was 66 years. There were but five patients under 50 years of age.

TABLE 1.—DISTRIBUTION OF BASAL CELL CARCINOMAS

	Scalp	Neck	Forehead	Temple	Eyelids	Nose	Cheeks	Upper Lip	Lower Lip	Hands	Shoulder	Back	Leg	Ears	Arm	Chest
Cases....	4	12	22	26	17	40	42	6	1	15	2	1	1	5	1	1
Lesions..	7	12	29	34	21	51	66	6	1	19	2	1	1	8	1	1

The usual site of the rodent ulcer is the upper part of the face, and it rarely occurs below the level of the lips. There were seven cases in which lesions were noted on the lip, and only one of these occurred on the lower lip. Rodent ulcers appeared on the dorsum of the hand in fifteen cases; three were noted on the shoulders and back, and one occurred on the leg. In every instance of the eighty-six cases there was at least one carcinoma on the upper part of the face or scalp.

Table 1 gives the distribution of the basal cell carcinomas noted.

The term "basal cell cancer" was introduced by Krompecher, who in 1900 traced the origin of growth to the basal cells of the malpighian layer, and described this histogenesis. The histologic study of the foregoing cases revealed the characteristic, rather compact masses of cells, which are circumscribed and separated

* From the Surgical Service, Barnard Free Skin and Cancer Hospital.

1. Ewing, James: Neoplastic Diseases, Philadelphia, W. B. Saunders Company, 1918.
2. Barber, R. F.: Med. Rec. **87**: 753, 1915.
3. Adamson, H. G.: Brit. J. Dermat. **29**: 81 (April-June) 1917.
4. Plass, E. D.: Johns Hopkins Hosp. Rep. **17**: 66, 1914.
5. Richards: Guys Hosp. Gaz. **24**: 69, 1920.
6. Savatard, Louis: Diagnosis of Early Epithelioma of the Skin, Brit. J. Dermat. **32**: 375 (Dec.) 1920.

from the surrounding tissues. A few of the sections showed some tendency to infiltration of the subdermal tissues, but this was by downward growth of reticulated strands, and not an infiltration of the lymph spaces by single cells or small groups of cells, such as is seen in the malignant carcinoma of mucous membrane origin or in the prickle cell growths of the skin.

GROUP 2. COINCIDENCE OF BASAL CELL AND PRICKLE CELL CANCERS

Group 2 comprises twenty cases, in each of which there occurred single or multiple basal cell carcinomas in patients having also a prickle cell cancer or a cancer of mucous membrane origin.

The distribution of the basal cell growths in this group is comparable to that shown in the cases recorded in Group 1. The youngest patient in the group was 34, the oldest 82, and the average age, 65 years. There were sixteen males and four females. The duration of growth was from one year to thirty years, and the average duration was five years. The distribution of the more malignant tumors of this group was: seven of the mucous membrane of the mouth; six on the face other than the lip; three on the mucocutaneous border of the lower lip, and four on the hand. The duration of these growths was from four months to five years. The average time of growth was less than one year, and only one had existed more than two years.

Five of the carcinomas originating on the mucous membrane were buccal growths, two of which had formed large verruca-like masses. There were submaxillary metastases in each case. There was one instance of malignancy originating on the upper alveolar ridge, invading the antrum, causing occlusion of the left nares, and bulging of the malar region. There was one case of carcinoma of the esophagus at about the level of the seventh cervical vertebra, in which metastases to the neighboring lymph glands were found.

The distribution of the prickle cell carcinomas of the face was: one on the left cheek with destruction of the eye; three on the right cheek; one on the right side of the nose involving the right eye, and one on the chin. Of the three growths of this type on the lower lip, all had metastasized to the submaxillary region. In all four of the cases presenting prickle cell cancers of the hand there were metastases to the axilla. Three of the tumors were on the dorsum of the right hand and one on the thumb of the left hand.

TABLE 2.—DISTRIBUTION OF PRICKLE CELL GROWTHS

Site	Buccal	Maxilla	Esophagus	Right Cheek	Left Cheek	Lower Lip	Nose	Hand	Chin
Cases	5	1	1	3	1	3	1	4	1
Metastases	4	0	1	1	0	3	0	4	0

Table 2 indicates the distribution of the prickle cell growths, and mucous membrane cancers of this group, and the number of cases of each. The cases in which metastases were found are noted, and it is seen that the tumors of buccal origin, of the lower lip and of the hand are more prone to metastasize than are the cancers of the upper jaw and upper part of the face. This fact has been borne out by observations in many more cases than are listed here.

GROUP 3. MULTIPLE MALIGNANT SQUAMOUS CELL CARCINOMAS

In Group 3 are included seven cases, each of which presented more than one prickle cell cancer, or multiple squamous cell carcinomas of mucous membrane origin. There were five mucous membrane cancers seen in three patients of this group, the remaining growths being prickle cell in type. The distribution of the lesions seen in this group of patients is indicated in Table 3.

The clinical history of Case 2 in this group is of interest. The patient was a miner, and during the use of the torch attached to his cap, hot oil would splash over his face. This had repeatedly burned his lower lip, and two distinct ulcerations had appeared, one at each corner of his mouth, and, persisting, had spread simultaneously at about equal rates of growth. Microscopic study showed both to be prickle cell cancers. The duration was about two years, and there were bilateral submaxillary metastases. Prickle cell cancers are not common in the upper part of the face, and in this respect Case 4 resembled the multiple rodent ulcer type, except that there was considerable piling up of tumor tissue. Microscopic study of the tissues displayed the definite characteristics of the more malignant growths.

TABLE 3.—DISTRIBUTION OF LESIONS IN GROUP 3

Case	Hand	Lower Lip	Upper Jaw	Cheek	Nose	Ear	Eyelid	Buccal	Tongue
1	+	+							
2	..	++							
3	..	+	+						
4	..	..	..	+	+	+	+		
5	+	+							
6	..	..	+	..	..	..	..	+	
7	..	..	..	..	..	..	..	..	++

In each of two cases, Cases 6 and 7, there were two neoplasms of mucous membrane origin, and in neither instance were the growths simultaneously present. In the first there was an apparently successful removal of a buccal carcinoma, the patient remaining free from cancer for a period of seven years, at the end of which time there appeared a small ulceration at the site of trauma by an upper molar tooth, of the lower alveolar ridge. Microscopic study showed this ulceration to be an early cancer of the alveolar border. The history of the last case is similar, as a right hemiresection of the tongue was performed, followed three years later by the appearance of a small ulcer on the left border of the tongue at the site of trauma by a ragged tooth. Clinical as well as microscopic study was afforded in each of these instances, and the late ulcers were without doubt recurrences of primary cancer foci.

The history of duration of growth of the tumors in this group was from three weeks, the shortest, to five years, the longest. The average duration was fourteen months, and in but one instance was the duration longer than two years. The average age of the patients in this group was 59 years. The youngest was 45, and the oldest, 72. All were men.

The usual result of the incomplete removal of a cancerous growth is the stimulation of the remaining cells to more active proliferation. May not some of the cases reported as of unusually late recurrence be the occurrence of new foci of neoplastic tissue? A case of interest in this connection is one at present under observation. The patient now presents, twenty-two years following a radical breast operation, an ulcerating cancer over the upper part of the scar. This case has not been included as one demonstrating multiple cancers, because the present growth is within the limits of the old operative field, and no microscopic study was obtainable. The suggestion that a neoplasm may stimulate an immunity reaction enough to prevent

an immediate growth of residual cells following a subtotal resection has often been discussed.

Histologic study of the prickle cell tumors of the last two groups displayed the somewhat variable picture seen in a series of sections of the acanthomatous cancers. Pearl formation was rather frequently present, and less often there was some infiltration of leukocytes in the surrounding tissues. The tendency toward tubular growth and rapid infiltration of the deeper structures was seen in a few cases. There is always some fibrosis of the tissues surrounding a cancer, but in the more malignant tumors this seems to have little effect in checking the growth of the cancer. In tumors of mucous membrane origin the pearl formation is absent; but the squamous cell characteristics, the infiltration of deep tissues and occasional tubular formation of growth are present.

GROUP 4. MULTIPLE BREAST CARCINOMA

Group 4 comprises fourteen cases of bilateral cancer of the breast. The youngest patient in this group was 25, and the oldest, 73 years of age. The average age was 46. The history of duration of the disease was from one month to seven years, and the average time of growth twenty-four months. All occurred in the female breast.

Ewing states that bilateral carcinoma of the breast is not uncommon, but that simultaneous occurrence is rare. This occurred in four cases, or 28 per cent., in this series. In three cases the appearance of the second growth was noted within a few months after the first. In three cases an apparently successful removal of the first growth was accomplished, followed by the appearance of cancer in the opposite breast in from one to four years later. There were found bilateral metastases in five cases, and unilateral metastases in five others. The frequency of bilateral occurrence has been estimated at from 5 to 9 per cent. of all cases of breast carcinoma. In the study of the so-called Schimmelbrusch cancer by Bloodgood, serial sections of breasts were made and multiple foci of cancer demonstrated in the same breast.

All cases in this group belonged to the adenocarcinoma type of growth. The histogenesis of adenocarcinoma of the breast has been shown to be papillary ingrowths of mammary cysts; and the names "intracanalicular cancer" and "villous cancer" have been applied to this type of growth. There is a tendency of many of the adenocarcinomas of the breasts to remain encapsulated, and thus they are likely to be less malignant and of longer duration than some other types of breast tumors. The adenomalignum, however, grows rapidly, metastasizes early, and may be one of the most malignant of breast neoplasms.

In one of the cases in which there was simultaneous appearance and growth of tumors of the two breasts, there was early ulceration and rapid spreading over the chest and abdomen, with the formation of the typical picture of carcinoma en cuirasse of Velpeau.

GROUP 5. COINCIDENCE OF BREAST AND OTHER TYPES OF CANCER

In Group 5 are included five cases, all of which presented carcinoma of the right breast and neoplasms of other than breast origin. The location and types of the various tumors and the respective ages of the patients have been indicated in Table 4. In each of Cases 1 and 2 the tumors of the breast and cervix were both present on admission to the hospital, but the history of symptoms indicated in each case that the growth in the breast was of about six months longer duration than that of the cervix. The history of duration of the breast cancers were fifteen and twenty-four months, respectively.

The average duration of the scirrhous carcinomas of this group was twenty months. Microscopic study of the sections proving to be scirrhous in type showed the infiltration of the cancer cells through a dense fibrous stroma characteristic of these growths. There was some round cell infiltration in one of these.

GROUP 6. MULTIPLE CYSTIC CARCINOMAS

Names that have commonly been given this type of growth are epithelioma adenoides cysticum and multiple benign cystic epitheliomas. These growths do not metastasize, and do not as commonly display ulceration and erosion such as that seen in the rodent ulcers, but they do invade and destroy surrounding tissues, and the view is held that they are more properly classed as malignant than as benign growths. This point was emphasized by Dr. Engman in a discussion of one of these cases in which invasion of the deeper layers of the skin was noted, and one of the growths had infiltrated the whole upper right eyelid, penetrating deeply into the orbit.

TABLE 4.—LOCATION OF TUMORS IN GROUP 5

Case	Age	Breast	Cervix	Forehead	Nose	Cheek	Scalp
1	44	Scirrhous	Squamous				
2	48	Medullary	Squamous				
3	73	Medullary	.....	Basal cell	Basal cell		
4	77	Scirrhous	.....	.....	.....	Basal cell	
5	33	Scirrhous	.....	.....	.....	.....	Basal cell

There were four cases presenting this type of neoplasm, two of the male and two of the female sex. The ages were 18, 31, 34 and 51 years. The history of duration was four, fifteen, six and four years, respectively. The areas involved were face, scalp, neck, chest, arms and vulva.

The origin of this type of tumor has been variously stated as from hair follicles, from sebaceous glands, and from sweat glands. There is some structural variation seen in different cases belonging to this type of growth, and probably any one of the tissues mentioned above may at times give rise to these tumors. The growth appears on the skin as hard, pearly nodules, which are sharply circumscribed. The cells are rather embryonal in type, and may be seen in alveolar arrangement, forming cysts having a colloid or mucoid material content. Finger-like strands of cells or masses of cells may be seen dipping into the alveoli.

GROUP 7. MELANOMAS

There were four patients presenting malignant melanotic tumors, either multiple or associated with other types of neoplasm. Two patients in this group presented multiple melanotic growths. The first was a man who gave a history of the appearance of pigmented nodules, one each on the neck and the chest, both of which, after a period of about nine months, began to grow rapidly. Both were excised, but widespread metastases appeared in a few weeks. The second was a man, aged 71, who for many years had had pigmented nevi on the forehead and the left eyebrow. There was a simultaneous malignant degeneration and growth noted in these tumors, which proved to be melanocarcinomas.

In the other cases of this group there were multiple basal cell cancers associated, in one instance, with a melanosarcoma of the back, and in the other instance, with multiple melanocarcinomas of the face, hands, scalp and neck. These patients were both men, aged 60, and 58 years, respectively.

The outstanding gross and histologic characteristic of melanomas is, of course, the presence of pigment, melanin, in the cells. The most common origin of this type of growth is from pigmented nevi, though in many cases it is impossible to state the source of the pigment-bearing cells. I have seen several cases in which there were deeply pigmented metastatic nodules, whereas the original growth had shown no melanin content. The peculiarly high grade of malignancy of melanotic neoplasms has long been recognized. I have never seen recovery in a patient who presented metastatic melanomatous growths.

GROUP 8. MULTIPLE CARCINOMAS OF THE STOMACH

There was one case, that of a man, aged 61, in which multiple cancers of the stomach were found. The duration of the symptoms was four months, and the history was not unusual. A subtotal gastrectomy was performed, and the specimen removed at operation presented four distinct masses in the wall, two of which were at the pyloric end, one anteriorly and one posteriorly placed. Two were about midway in the stomach wall, one on the anterior and one on the posterior wall. There was a punched out, necrotic crater in each of the masses, apparently gastric ulcers, in each of which malignant degeneration had taken place. Neither metastasis nor implantation from a single primary focus would explain all the carcinomas present.

Histologic study of the growths disclosed them to be of the adenocarcinoma type, in which there is a retention of the glandular structure of the mucosa. There was a more densely cellular mass than is seen in normal mucosa, and there was marked infiltration into the submucosal layers. There was also present considerable round cell infiltration.

GROUP 9. CASES PRESENTING MORE THAN TWO TYPES OF NEOPLASM

There were two cases in which more than two types of malignant neoplasm were present. The first of these cases has been reported.[7] There were present seven neoplasms, including a basal cell carcinoma of the forehead, a sarcoma of the antrum, and bilateral adenocarcinomas of the breasts.

The second case was that of a woman, aged 69. Both breasts had contained nodules for twenty-five years, and in the last year, rapid growth of tumors in both breasts was noted. The left lower alveolar border was the site of a malignant squamous cell carcinoma, from which there were metastases to the submaxillary region. There was also present a large carcinoma of the cervix, which bled rather freely on manipulation, and which had infiltrated the surrounding pelvic tissues.

The growth of the breast tumors in the latter case was virtually simultaneous in the two breasts, and though no microscopic examination was obtainable, the clinical picture admitted no doubt of malignancy. In view of the history of a preexisting chronic mastitis, and the fact that growth was noted in the breasts before symptoms of the mouth and cervical cancers appeared, the possibility of the breast tumors being metastatic from either cannot be entertained.

SUMMARY OF GROUPS

The grouping of the cases as given above is purely for convenience of description, and in several instances there are cases presenting the same type of growth in two or more groups. Groups 1, 2, 5, 7 and 9 contain cases of basal cell cancer, making a total of 111 patients presenting this type, or 78 per cent. of the total series. Groups 2, 3, 5 and 9 include twenty-nine cases of malignant squamous cell growths (prickle cell and mucous membrane cancers), or 20.5 per cent. of the cases. Groups 4, 5 and 9 include twenty-one cases of breast cancer, making 14.8 per cent. of the cases. The other types of neoplasm in the series are: cervix, two cases, 1.4 per cent. of the total; cystic dermal carcinoma, four cases, 2.8 per cent.; melanomas (sarcoma and carcinoma), four cases, 2.8 per cent.; one case of carcinoma of the stomach, 0.7 per cent., and one case of sarcoma of the antrum, 0.7 per cent. of the total,

Table 5 indicates briefly the number of cases presenting various types of growth in each group. The prickle cell and mouth cancers are not differentiated in the table.

TABLE 5.—VARIOUS TYPES OF GROWTH, ACCORDING TO GROUPS

Group	Malignant Basal Cell	Malignant Squamous Cell	Breast	Cervix	Cystic Dermal Cancer	Melanoma	Stomach	Sarcoma
1	86	..	..	..	..	..	..	..
2	20	20	..	..	..	..	..	..
3	..	7	..	..	..	..	..	..
4	..	..	14	..	..	..	..	..
5	2	1	5	2	..	..	..	..
6	..	..	..	..	4	..	..	..
7	2	..	..	..	..	4	..	..
8	..	..	..	..	..	..	1	..
9	1	1	2	1	..	..	..	1

COMMENT

The time that must elapse after the treatment of a malignant disease, before a cure is said to have been accomplished, has been extended from one to three, and later to five years or more. There can be no doubt that metastases that have been apparently dormant for more than five do occur. Bloodgood [8] reports a case in which lung metastases from a sarcoma of the femur caused death after a period of nine years. A considerable number of such cases have been recorded. I, however, believe that many cases recorded as metastases or residual growth from neoplasms previously treated are not such, but are new foci of growth. One case in illustration is that previously mentioned, of a cancer appearing on the chest wall near the sternum, twenty-two years after a radical breast amputation. I have under observation a patient from whom a prickle cell cancer of the temple was removed four years ago, the resulting scar being smooth and pliable. A few weeks ago there appeared another lesion so situated that the old scar was cut into in the excision of the second growth, which proved to be another prickle cell cancer. Another instance is that of a woman who was a "four and one-half cure" of a carcinoma of the cervix, when growths that were termed late vaginal metastases appeared. There was no opportunity for microscopic examination, but from physical findings I believe that the case was one of a primary cancer of the vagina. Another case, which I believe is one of multiple cancers, is one in which there was freedom from all signs

7. Withers, Sanford, and Owen, L. J.: Report of Case of Multiple Neoplastic Tumors, J. A. M. A. 75: 742 (Sept. 11) 1920.

8. Bloodgood, J. C.: J. Radiol. 1: 147 (March) 1920.

of malignancy for five years following the excision and plastic repair of a basal cell cancer of the forehead. At present the patient has a basal cell cancer in the area of the skin flap. I will not at present cite further cases, but I believe that there are many more which, with more thorough investigation, could be grouped as multiple neoplasms.

A patient who has apparently been successfully treated for a malignant disease is not immune to the growth of further neoplastic tissues. If the origin of his tumor was an embryonal rest, he may have many more, potentially malignant, in his tissues. If the important etiologic factor is specific cancer infection, an organism, then reinfection can occur. If it was at the site of chronic irritation, then might not it be that his tissues are prone to react unfavorably to chronic irritation and show malignant degeneration at such points? Savatard emphasizes that multiple growths of cancer of the face must be borne in mind where one has appeared. An article on cancer infection by A. J. Ochsner [9] would, it seems to me, emphasize the possibility of frequent multiplicity in malignant disease.

During the observation of a patient for metastatic or residual cancer following treatment of the original disease, the possibility that he may present new foci of neoplastic tissue should not be overlooked, and all points of irritation of tissues of whatever source should, if possible, be eliminated.

Washington and Theresa Avenues.

GRANULOMA FROM INDELIBLE PENCIL

MAX BALLIN, M.D.
AND
HARRY C. SALTZSTEIN, M.D.
DETROIT

REPORT OF CASE

Miss P. H., aged 37, clerk, seen, Sept. 23, 1920, fell, September 3, as she was carrying an indelible pencil in her right hand, the point entering the dorsum of the hand and breaking off. A swelling slowly formed about the point of entrance. Ten days later a small incision was made, but only a small quantity of serum was obtained.

Examination, September 23, revealed a tumor-like induration, 2 inches in diameter, on the dorsum of the right hand, overlying the second and third metacarpals. The midportion was bluish, and in its center was a small, indolent, bluish, sinus tract. Flexion of the fingers—especially the second and third—was limited.

September 25, a 2-inch elliptical incision was made surrounding the tumor on the dorsum of the hand. A small granuloma was located between the second and third extensor tendons. It was intensely blue stained; the dye had infiltrated into the tissues between the two tendons and between the second and third metacarpal bones. There was considerable soft, bluish, necrotic tissue. This was cleanly dissected and curetted away. The wound healed by first intention, but it took five weeks to establish complete function in the fingers.

IRRITATING EFFECT OF INDELIBLE PENCIL

Indelible or copying pencils are made of a mixture of graphite, alum, kaolin, and a basic anilin dye of the triphenylmethane group, generally methyl violet. Anilin and other coal tar products are intense local irritants. All workers in coal tar and analin industries are subject to eczema and acne, and Schamberg showed that they were frequently affected with papillomas of the forearms and hands. Papilloma and carcinoma of the bladder are more frequent among anilin workers than other individuals. Anilin dyes rubbed into the skin produce hypertrophy of the epithelium. Rubbing a rabbit's ear daily with anilin or coal tar will produce epithelial hypertrophy, and, if persisted in long enough, a carcinoma will develop. Ophthalmologists have long known that a bit of an ordinary (graphite) pencil in the eye was only a mechanical irritant, while very minute bits from a copying pencil quickly produced chemosis, edema of the lid, and cloudiness of the cornea. If not removed, or if a larger piece had found its way into the eye, there was necrosis, purulent inflammation of the cornea and staphyloma. The inflammation is chemical, not bacterial, for the pus is sterile.[1]

Erdheim [1] has observed twenty-three cases of injury of the hand, foot or body due to retained pieces of indelible pencil, and has studied the pathologic changes when it is injected subcutaneously into animals.

Within half an hour after closing a piece of indelible pencil in the abdominal subcutaneous tissue of a rat, guinea-pig or other animal, there is a soft edema of the skin, spreading widely, sometimes involving half the abdomen. This disappears after some hours. In twenty-four hours there is a large cystlike cavity in the subcutaneous tissues surrounding the indelible mass, and into the fluid of this the dye dissolves. The cyst shrinks in from four to six days, and is partially replaced by necrotic tissue; but it acts as a depot for continuous diffusion of the dye into the tissues for weeks. The necrosis extends widely—as far as the dye penetrates. There is marked leukocytic infiltration and barrier wall formation, but the process differs from the ordinary infection in that there is very little discharge or throwing off of tissue, and it differs from the usual foreign body reaction in that necrosis is much more evident, is progressive, and involves all contiguous tissues.

Foreign body giant cells are seen about some of the fat cells in the periphery. The blue color pervades everything. The epithelium covering the lesion is markedly thickened, and this hypertrophy includes the stratum granulosum and lucidum as well as stratum spinosum.

CONCLUSION

Pieces of indelible pencil broken off in tissues should be immediately and thoroughly removed. If extracted within an hour, there is no further trouble. After this the anilin violet dissolves and invades the tissues, causing irritation and gradual formation of granulomas. When the process has progressed to this stage, complete excision of all stained tissue is required.

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9. Ochsner, A. J.: Ann. Surg. **73**: 294 (March) 1921.

1. Erdheim, S.: Ueber Verletzungen mit Tintenstiften, Arch. f. klin. Chir. **106**: 91, 1914; Zur Pathologie und Therapie der Tintenstift- (Kopierstift-) verletzungen, Arch. f. klin. Chir. **113**: 772, 1920. Medical Science, Abstracts and Reviews **111**: 239, 1920.

Industrial Medicine in Italy.—Sixty physicians enrolled for the recent graduate course at Rome on the pathology, hygiene and medical aspect of industrial medicine, or, as the Italians call it, *la medicina del lavoro*. Eight professors delivered the lectures at the university institute for hygiene, including two from the law faculty. The clinic at Milan for occupational diseases has now two fellowships at its disposal for graduate work. One is offered by the Siccardi endowment and the other by the society, "Friends of the Clinica del Lavoro." The stipend is 1,800 liras a year, and a gold medal is also conferred. This is open only to graduates of Italian universities. Prof. R. Cassanello has also inaugurated at Spezia a course of public lectures on occupational pathology and hygiene, which are said to be much interesting the public.

LOCAL ANESTHESIA FOR SIMPLE MASTOID OPERATIONS

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As the advantages of the method seem pronounced in seventy-two cases in which local anesthesia was employed for the performance of simple mastoid operations, it is presented here for consideration.

PREOPERATIVE PREPARATION

The preoperative preparation of the patient consists of shaving the part as usual. The meal previous to the operation is omitted and a simple enema may be given. One-fourth grain of morphin and $\frac{1}{150}$ grain of atropin are given one-half hour before the operation. The patient is not brought to the operating room until all preparations for the operation have been completed and the operator and his assistants are ready to begin the operation. The patient is placed in a comfortable position on the operating table. This requires careful attention, as the comfort of the patient is very important. The field is prepared in the usual manner. As in all work with local anesthesia, the mental attitude of the patient plays a great part. Prior to the operation the word "mastoid" and "operation" are avoided; an expression such as "open the bone" or "get out the pus" is used. During the operation it is advantageous for the operator to carry on a conversation with the patient having no bearing on the operation.

TECHNIC OF ADMINISTERING ANESTHETIC

For all of the cases, 1 per cent. procain with from 1 to 2 drams of 1:1,000 epinephrin solution to the ounce has been used. The procain and epinephrin are boiled separately. An ordinary 2-c.c. Luer syringe with a No. 23 gage 1-inch needle has been used. The subcutaneous tissues are first infiltrated, beginning at a point directly posterior to the external auditory meatus in the line of incision and following the line of incision to its most upper and anterior point, and then downward anterior to the pinna as far as the level of the tragus. The next infiltration begins at the same point as the first, and extends downward to about 1 inch below the mastoid tip. At this point a slightly deeper injection is made; this effectively blocks the great auricular nerve. Directly below the mastoid tip a deeper injection is now made; this blocks the posterior auricular nerve. The branches of the small occipital nerve are now blocked about $1\frac{1}{2}$ inches posterior to and on a level with the external auditory meatus. The needle is now inserted from behind the ear into the posterior wall of the external auditory canal, nearly to the attachment of the tympanic membrane. This step is very important, as the patient will experience pain when the periosteum around the canal is elevated, and the pinna is pushed forward if this injection is not made. Finally, the needle is thrust under the periosteum in four or five places so that the anesthetic completely infiltrates all the periosteum that is to be elevated. All this is done before the skin incision is made, and it is not necessary to use any more anesthetic after the operation has been begun.

It requires from 6 to 8 c.c. of solution to complete the anesthesia. As soon as the last injection has been made, skin clamps are used to hold the mastoid sheet and towels in position. It is not necessary to wait after the injection has been finished before the incision is made.

THE OPERATION

The technic of the operation differs in no way from the same operation under a general anesthetic. After making the incision through the skin, periosteum and intervening structures, the operator is happily surprised to find an almost bloodless field. Occasionally it may be necessary to clamp one or two of the larger vessels with hemostatic forceps; but after the self-retaining retractors are placed in position, the field is practically bloodless. In this series of cases an electrically driven bone drill has been used almost exclusively to make the first opening in the bone. After that, rongeur forceps and bone curets are used in the usual way. If it is desired to uncover the lateral sinus, this can be done painlessly without any further use of anesthetic. In cases in which there is an extradural abscess, the inner table of bone can be removed as necessary. In two cases in which there was a meningitis extending from the middle ear or mastoid, the dura was incised and a drain inserted. In one case the lateral ventricle was aspirated to relieve intracranial pressure.

ADVANTAGES

A general anesthetic is more or less difficult to administer to a patient undergoing a mastoid operation, on account of the position of the patient, small amount of space and danger of contaminating the field of operation. If the patient's tongue has a tendency to fall backward, or if there is an excess of mucus, the difficulties are still further increased. Then, too, the operator and his assistants usually inhale a considerable portion of the anesthetic. A large proportion of mastoid operations follow an attack of measles, which may also have been complicated with pneumonia and in which a general anesthetic would be given more or less reluctantly. In this series, thirty-five were mastoid cases that followed otitis media complicating measles, and five of the patients had or were recovering from bronchopneumonia at the time of operation. By employing local anesthesia, we were able to operate earlier in a large percentage of the cases than would have been possible if it had been necessary to give a general anesthetic. In one case of frank lobar pneumonia, operation was performed on the third day of the pneumonia. The patient recovered uneventfully from the pneumonia, and the mastoid wound was healed on the twelfth day.

Many patients resent taking a general anesthetic; they fear the anesthetic more than the operation, especially if they have previously taken ether. They dread the operation much less if they are told that their condition can be remedied by simply injecting a solution around the ear to alleviate the pain. It is a great relief to most patients to inform them that they will be allowed to drink water as soon as they come from the operating room. It is also gratifying to the operator to see the patient fall into a natural sleep after the operation, instead of nauseated and uncomfortable while reacting from a general anesthetic. In fact, many patients actually fall asleep while being operated on.

This method is applicable to all patients except children too young to be reasoned with. In this series the ages range from 15 to 32. However, there is no reason why patients much younger than 15 should not be operated on by local anesthesia, provided they have not been terrorized.

As the middle ear and mastoid are directly connected with the respiratory tract, it naturally follows that diseases of these two organs are practically always the result of infection from the respiratory tract, as tonsils, accessory sinuses and lungs. Consequently, with infection harbored in the respiratory tract, there is always a possibility of a pneumonia or bronchitis getting a foothold after irritation with a general anesthetic.

The first case in which this method of anesthesia was used was a case of mitral regurgitation, with signs of decompensation. The patient was admitted to the hospital with measles. He developed acute mastoiditis and acute endocarditis. He was considered a very poor risk for operation. However, when he developed a marked periostitis over the mastoid bone and a Bezold abscess with a decided septic temperature, it was decided to open the mastoid. The anesthesia was found completely satisfactory and the operation was completed without affecting the heart condition. The next three were cases in which a general anesthetic was not desirable. The last sixty-eight cases have been consecutive admissions to the hospital, and operation was performed under local anesthesia regardless of whether a general anesthetic was contraindicated or not. In none of the cases has it been necessary to give ether or other general anesthetics to complete the operation.

CONTRAINDICATIONS

There does not seem to be any contraindication for the use of this method except in the very young. In this series there were five cases of double mastoid operation, the second operation being performed in from two days to three weeks after the first. Each one of these patients readily consented to the second operation by the same method, not one of them expressing any desire to have a general anesthetic.

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THE SPIROCHETICIDAL VALUE OF DISODIUM ETHYL ARSINATE (MON-ARSONE)*

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The success of the arsphenamin group of arsenicals in the treatment of syphilis soon led to a trial of other groups, especially the well-known aliphatic compounds, such as sodium dimethyl arsinate (sodium cacodylate) and disodium methyl arsinate (new cacodyl or arrhenal). The success of the arsphenamin group was assured by a firm foundation of animal experiment which preceded their practical use and gave a rational germicidal basis for their application. As much could not be said for the proposed substitutes. They were advocated on a limited clinical experience which was misleading, because the improvement noted was symptomatic rather than specific. Thus, sodium cacodylate was early advocated in this country by a distinguished and lamented surgeon,[1] and is still advertised for use in syphilis. But the application to sodium cacodylate of the tests which resulted in the discovery of arsphenamin showed that, while arsphenamin is effective in one tenth of its fatal dose, sodium cacodylate, even in toxic doses, has no effect on the spirochetes of syphilis.[2] This finding has been confirmed by a number of observers.[3] There may be some clinical improvement after the use of sodium cacodylate, as the drug, like potassium iodid, may favor absorption of the exudate; but there is no adequate destruction of the cause of the exudate. In other words, the treatment is symptomatic rather than etiologic, and the results cannot be regular and lasting.

Recently another substitute for asphenamin has been proposed—disodium ethyl arsinate, or mon-arsone.[4] In spite of the history of sodium cacodylate, this homologous drug has been advocated as less toxic than arsphenamin and more parasitotropic, although no evidence on the latter point is submitted. Some studies have just been made on these compounds by Voegtlin and Smith,[5] using trypanosomes as test organisms. They found that for sodium cacodylate and ethyl arsinate the ratio of minimum lethal dose: minimum effective dose was 1, while the same ratio for neoarsphenamin was 28, and for arsphenamin, 17. These results with trypanosomes are convincing in general, but naturally for a conclusive answer to the question of the value of this drug in syphilis, it is desirable to know its actual effect on *Spirochaeta pallida* and experimental lesions. In consequence of a request for information on this point, the experiments here described were carried out. They show that the spirocheticidal value of mon-arsone is too small to warrant any practical use of this compound in human syphilis.

TABLE 1.—MINIMUM LETHAL DOSE

Rabbit	Dose per Kilogram, Gm.	Result	Principal Lesions
994	1.0	Death in 4 hours	Hemorrhage of ileum
992	0.66	Death in 24 hours	Hemorrhagic nephritis
163	0.55	Death in 24 hours	Hemorrhagic nephritis
V 3	0.33	Death in 24 hours	Hemorrhagic nephritis, hemorrhage from liver
97	0.33	Death in 72 hours	Hemorrhagic nephritis
V 5	0.2	Death in 48 hours	Hemorrhagic nephritis
V 7	0.1	Death in 96 hours	Hemorrhagic nephritis
V 8	0.1	Death in 72 hours	Hemorrhagic nephritis
V 10	0.075	Death in 96 hours	Hemorrhagic nephritis
Ty	0.075	Death in 72 hours	Hemorrhagis nephritis
V 5	0.05	Lived, apparently not affected	

The problem was to determine the relation of the minimum lethal dose or maximum tolerated dose of disodium, monoethyl arsinate ($C_2H_5—As\begin{matrix}=O\\—O—Na\\—O—Na\end{matrix}$) to the therapeutically effective dose. The minimum lethal dose was determined by injecting rabbits intravenously with varying doses according to body weight, and observing results. The drug was obtained from the manufacturers in ampules containing 2 gm. in 10 c.c. of sterile water.

The minimum lethal dose may be taken as 0.075 gm. per kilogram. The pictures, clinical and pathologic, were strikingly uniform, and consisted of somnolence and hemorrhagic tubular nephritis. The corresponding fatal dose for a 70 kg. adult would be 5.25 gm. The dose of 2 gm. which is advocated is, therefore, closer to the theoretically dangerous point than is considered safe with other arsenicals. The corresponding minimum lethal dose for rabbits for sodium cacodylate is 0.15 gm., and for arsphenamin 0.1 gm. per kilogram.

*From the Division of Laboratories, Army Medical School.

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3. Castelli: Arch. f. Schiffs- u. Tropen-Hyg. **16**: 605, 1912. Alston: Brit. M. J. **1**: 360, 1911. Neisser: Beitr. z. Path. u. Therap. d. Syph., 1911, p. 261

4 Wright, B. L.; Kennell, L. A., and Hussey, L. M.: M. Rec. **97**: 607 (April 10) 1920.

5. Voegtlin, Carl, and Smith, H. W.: J. Pharmacol. & Exper. Therap. **15**: 475 (July) 1920; **16**: 449, 1921.

The minimum effective dose was determined by giving different doses, intravenously, to rabbits with chancres and examining daily for effects on the spirochetes and the lesions. The strain used was the V strain, which has been in rabbits since 1912 and produces good chancres on scrotal inoculation.

TABLE 2.—MINIMUM EFFECTIVE DOSE

Animal	Dose per Kilogram Intravenously, Gm.	Control	Daily Examinations for Spirochetes 1	2	3	4	Results
V 11	0.025	+	+	+	+	+	No effect on spirochetes; lesion smaller but persisted
V 5	0.05	+	+	+	+	..	No effect on spirochetes or lesion
V 10	0.075	+	+	+	+	⊕	No effect on spirochetes; lesion smaller; death from nephritis 4th day
V 7	0.1	+	+	..	..	⊕	Some effect on lesion; death from nephritis on 4th day
V 8	0.1	+	+	—	⊕	..	Some effect on lesion; death from nephritis on 3d day
V 5	0.2	+	+	⊕	..	..	Some effect on lesion; death from nephritis on 2d day
V 3	0.33	+	⊕—	..	..	..	Spirochetes killed; death from nephritis on 1st day
V 12	0.005 arsphenamin (silver)	+	—	—	..	—	Spirochetes killed; lesion resolved

⊕ = death from drug.

The following is an illustrative experiment:

V 5 was inoculated subcutaneously in the scrotum, November 6.

December 13: Large chancre; spirochetes +.
December 16: Spirochetes +. Mon-arsone, 0.05 per kilogram, intravenously.
December 17: Spirochetes +; active.
December 18: Spirochetes +; active.
December 20: Lesion not affected.
December 28: Lesion not affected; spirochetes + 0.2 gm. per kilogram; mon-arsone intravenously.
December 29: Spirochetes +.
December 30: Dead; hemorrhagic nephritis.

Animal V 10 is especially instructive in relation to the claims of parasitotropism. This animal had a good chancre which shrank noticeably after a dose of 0.075 gm.; but good active spirochetes could be found for three days. On the fourth day the animal died of hemorrhage nephritis.

If the death of the spirochetes is taken as a standard of the minimum effective dose, this would be 0.33 gm., while the minimum lethal dose is 0.075. In other words, the $\frac{\text{M.L.D.}}{\text{M.E.D.}}$ is $\frac{0.075}{0.33}$ or a negative quantity. If effect on the lesion is taken as the standard, then $\frac{\text{M.L.D.}}{\text{M.E.D.}} = \frac{0.075}{0.075}$, or 1. In other words, the substance has as much or more poisonous effect on the tissues as on the spirochetes.

COMMENT

In view of these results, it is difficult to understand the claims that this is an "ideal" arsenic compound for the treatment of syphilis. It lacks the essential characteristics of the arsphenamin group, namely, high spirocheticidal value.[6]

The work of Voegtlin and Smith[5] has thrown considerable light on the probable nature of the parasiticidal action of arsenicals. They have shown that all these compounds act as R — As = 0. The arsphenamin group must be oxidized to this form, and their relative action depends on the relative rate of excretion. The pentavalent aliphatic compounds must be reduced to the same form. Reduction is more difficult in the body than oxidation, and a large amount of the drug is excreted unchanged and without action.

It is seen that mon-arsone does not stand in the same class at all with the arsphenamin series, so far as experimental syphilis is concerned. Of course, it is true that the animal test is not always conclusive. For example, if mercury were being tested experimentally as a spirocheticide today for the first time, it would be thrown out at once as too toxic.[7] This conclusion would be reached because the rabbit is especially susceptible to mercury[8] and because mercury is not as suited for the intensive, intravenous method of treatment as the arsenicals. As between different arsenicals, however, the results of experimental therapeutics can be accepted as fair and conclusive.

SUMMARY

1. Disodium ethyl arsinate, or mon-arsone, tested on rabbits infected with syphilis shows no spirocheticidal power. The tissues are fatally poisoned as soon as or before the spirochetes are affected.

2. For its practical use in syphilis there is no such germicidal basis as exists in case of the arsphenamin group.

6. Pharmacology of Arsenicals, Current Comment, J. A. M. A. **76:** 595 (Feb. 26) 1921. Warning Against Untried Medicaments, General News, ibid. **74:** 1654 (June 12) 1920.

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8. Kolle, W., and Ritz, H.: Deutsch. med. Wchnschr., 1919, No. 18.

SOME DIFFICULTIES IN THE DIAGNOSIS OF EMPYEMA COMPLICATING PNEUMONIA *

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The frequency with which pneumonia is complicated by empyema varies much in different epidemics. But it is an ever-present danger, one always to be looked for in any patient, recovering from pneumonia, in whom the temperature fails to remain normal. Other complications, such as delayed resolution, lung abscess, otitis media, endocarditis and arthritis, may be present, but empyema must always be borne in mind and looked for assiduously in a delayed or protracted convalescence.

When the physical signs of empyema are frank, there is usually no difficulty in recognizing its existence; yet, in exceptional cases, even exploratory puncture with the finding of pus may be misleading. It is with such cases that the present note has to deal; interlobar empyemas are not included.

In the last few years, we have observed a number of cases in which, following an attack of pneumonia, dulness over the affected lobe became more intense, even flat, with distant or absent breath sounds, not infrequently egophony, and diminished or absent vocal fremitus; often with dulness over the lower dorsal spines and a paravertebral triangle of dulness on the unaffected side. Given such physical signs, exploratory puncture is always indicated. If a syringeful of pus is obtained, the diagnosis is practically certain, and drainage is indicated.

It sometimes happens, however, that only a drop or two of pus is obtained, and then the interpretation of the finding is more difficult. The accompanying case histories are illustrative.

* From the Medical Clinic of the Cincinnati General Hospital.

REPORT OF CASES

CASE 1.—A negro man, aged 24, single, was admitted to the hospital with frank lobar pneumonia of the left lower lobe. The disease followed the usual course, with fever, neutrophilic leukocytosis of 25,400 and rusty sputum, terminating by lysis. The temperature, however, did not remain normal, irregular elevations occurring. There were found at first only physical signs indicative of delayed resolution. Soon, however, the dulness increased to flatness, breath sounds were scarcely audible, and there was egophony at the angle of the scapula, with a paravertebral triangle of dulness on the opposite side. The heart was not displaced. Exploratory puncture was performed, but no pus was obtained in the syringe. On withdrawal of the needle, however, a drop of thick, yellow pus was expressed from it. Examination under the microscope revealed numerous pus cells, a few alveolar epithelial cells and *dust cells*, the latter proving conclusively that the pus was derived from the lung, in all probability from the contents of a bronchus. Surgical treatment was not resorted to. The signs persisted, and the patient, extremely asthenic, died within a few days. At necropsy, there was found in the left lower lobe an unresolved pneumonia, with purulent secretion in the bronchi. The affected part of the lung was airless. There was no empyema.

CASE 2.—Mrs. L. C., white, a widow, aged 32, was admitted to the hospital with temperature, 103.2 F.; respiration, 36, and pulse, 132. She was extremely toxic, with 14,000 leukocytes, of which 88 per cent. were polymorphonuclears. There was dyspnea. A history was not obtainable, beyond the fact that the patient had been ill about two weeks before admission, the onset being with chill, fever and pain in the left side. Physical examination revealed herpes on the upper lip, slight movement of the alae nasi, and flatness over the left base. Vocal fremitus was very weak on the right, and absent on the left. There was dulness beginning at the sixth dorsal spine, with Grocco's sign on the right. There was no egophony. The voice sounds and breath sounds were weak and distant. An exploratory puncture was made in the ninth left interspace posteriorly, and about 2 c.c. of pus was obtained. Microscopically, only pus cells were found. Surgical consultation was obtained, and resection of a rib was decided on.

The operation was performed under ether anesthesia two days after admission. The pleural cavity was found to be entirely free from fluid. Shortly after the pleura was entered there was a sudden gush of blood from the mouth, and the patient expired on the operating table. Necropsy was obtained. The cause of death was found to be a small aneurysm of the arch of the aorta, about the size of the terminal phalanx of the thumb, which had eroded the trachea and ruptured into the latter. The left lung was filled, in its lower lobe, with multiple abscesses, the largest measuring about 3 cm. in diameter. The bronchi were occluded with yellow, creamy pus. The left lower lobe was airless. Doubtless, the contents of a small abscess was aspirated, but as pus cells alone were found, we were misled into assuming the presence of empyema. In this case, because of the signs characteristic of fluid, we see no way of avoiding the mistake.

COMMENT

There have been many instances in which, with a delayed resolution, all the signs of fluid in the pleural cavity have been observed. At times, the signs persist for two or three days, only to disappear for a short time or permanently. Not infrequently, the signs of fluid are present one day, absent the next, and reappear the third day. In such cases, exploratory puncture usually fails to reveal pus.

I have come to the conclusion, as a result of numerous necropsy findings, that all of the evidences of fluid in the pleural cavity may result when, in addition to infiltration of the lung, the bronchi are filled with secretion. This, in effect, is a massive pneumonia, a condition which has long been known to simulate fluid in the pleural cavity.

That such a condition may exist as a sequel of pneumonia and lead to the presumption of an empyema has not, I believe, been sufficiently appreciated. Dry taps or the presence of dust cells in the pus, as well as variability in the physical signs from day to day, serve to differentiate the conditions. In many instances, too, the roentgen ray is helpful in diagnosis. A well defined Grocco's sign or egophony, or both, may often be found; but displacement of the heart, an unreliable sign, unless a large, left-sided effusion exists,[1] is lacking. Neutrophilic leukocytosis, though usually low, is often present, with remittent, rarely intermittent, fever.

THE OCCURRENCE OF PELLAGRA IN PATIENTS APPARENTLY RECEIVING AN AMPLE DIET

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Pellagra not infrequently develops in patients receiving treatment for other conditions in institutions which provide an adequate and varied ration. Occurrences of this kind tend to prejudice the clinician against the dietary etiology of pellagra. However natural under such circumstances the conclusion against the dietary etiology may appear to be, the study of several such cases coming under our observation has convinced us that the reasoning involved is defective and the conclusion not necessarily warranted.

The following history, typical in our experience, illustrates this:

M. S., a colored woman, aged 32, received at the Georgia State Sanitarium, Sept. 10, 1920, was well developed and well nourished. There was no evidence of pellagra. A mental diagnosis of alcoholic hallucinosis was made. She remained in a general ward several weeks but ate poorly, and was moved to the infirmary, October 31, on account of a poor appetite, loss of weight, and general weakness. For several days she took practically no food voluntarily and was tube fed. The nurses reported that she was eating, and the tube was not resorted to after November 5. From this time on the ward physician paid no special attention to her eating, as the menu was sufficient and her appetite was reported as fair or good.

A very mild pellagrous dermatitis was noticed about the wrist, December 31, and in a few days the lesions were quite well developed and involved the knuckles and bases of the thumbs. The dermatitis was quite symmetrical bilaterally. A diarrhea began within a few days. The mouth or tongue did not become appreciably red or sore.

While in a general ward the patient had access to a fairly liberal supply of food, with the following menu: For breakfast, hominy grits or oatmeal, a biscuit and a roll (wheat), beef hash, and coffee; for dinner, wheat bread, corn bread, beef (roast or stew), and two vegetables (potatoes, sweet potatoes, beans, peas, turnips, green salad, and rice being most frequently used); for supper, wheat bread, syrup (or occasionally stewed fruit) and tea. The menu in the infirmary differed from that given above in that hash and syrup were usually omitted, a cup of fresh milk given regularly at each meal, and butter given at breakfast and supper.

After the development of pellagra, an effort was made to get the facts concerning the patient's eating. Several nurses were independently questioned, and without any essential

1. In a recent case of left-sided pleural effusion, 1,800 c.c. of serous fluid was aspirated, yet there was no displacement of the heart, the right border remaining 3 cm. to the right of the median line in the fourth interspace before and after the thoracentesis. In this case, too, Grocco's sign was absent.

variation they stated that the woman had practically never eaten any beef and that she never drank her milk, only using about an ounce in her coffee daily, but that she frequently ate fairly well such articles as grits, bread, rice, potatoes and other vegetables. The patient's own story coincided with this.

In connection with the foregoing it may be stated that one of us has studied the diet of several individuals in good circumstances who have developed pellagra outside of institutions with the result that strong dietary eccentricities, principally against the protein-containing foods, were usually found to have existed prior to the onset of pellagra, thus confirming the observations reported by Roberts.[1]

It will thus be seen that it is not proper to assume that because a patient is provided with a certain diet this also is eaten; there is danger of drawing erroneous conclusions when the knowledge in hand concerns the available food supply rather than the diet actually consumed by the patient.

THE EFFECT OF SMALL DOSES OF ATROPIN ON THE HEART RATE*

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In a study of the action of atropin I have been somewhat surprised at the slowing of the heart rate produced by small doses. This is especially important if we use the pharmacopeial dose, which is 1/120 grain, or 0.0005 gm.; with this dosage the only influence on the heart seems to be a slowing of the rate. So far as I know, atropin is never given for the purpose of slowing, and in many cases this action on the heart in practice would be unimportant. If, however, the object of giving atropin is to eliminate vagus control, as is sometimes advised in excessive slowing after digitalis, or other cases in which the pulse is slow and irregular,[1] the pharmacopeial dose in most cases will produce the opposite effect.

With regard to the action of atropin on the heart, Wood[2] says: "The characteristic results of its administration are a rapid pulse, . . . but atropin may cause a primary slowing of the pulse, *very brief and only occasionally to be demonstrated.*" Sollmann[3] calls attention to the fact that therapeutic doses of atropin do not usually affect the pulse rate, but that experimental doses greatly increase it. Also because atropin acts on the vagus center as well as the vagus endings, it may cause a primary slowing. Stevens[4] says that, prior to the acceleration, there is occasionally some slowing from stimulation of the inhibitory center in the medulla. Green[5] says that therapeutic doses of atropin have little accelerator effect on the heart rate of very young animals or of young children, owing to the fact that the vagus tone is less developed in the young; 1 mg. (1/60 grain) or larger doses produce in man a perceptible acceleration of the heart beat. He does not mention a decrease in rate. Poulsson[6] says that, after primary stimulation (aufanglicher Erregung), atropin paralyzes the vagus ending. Dixon[1] states that some cardiac slowing is occasionally seen in man soon after an administration of atropin, but that the slowing is at most very transient.

Cushny[7] does not mention a slowing produced by atropin, but states that the action on the vagus endings is purely depressant. However, he mentions a stimulation of the central nervous system.

If we could get the central action independent of the peripheral action, we should expect only slowing. With small doses we may get such an action, and apparently at some stages in the action of larger doses, presumably while only a part of it has been absorbed, slowing is sometimes seen. None of the authors state that slowing is the only result of a small dose, and most authors do not mention this slowing of the heart rate. However, clinicians[8] inform me that it is a common occurrence; especially has it been observed in exophthalmic goiter and in cases of vagotonia. This statement I accept readily, since it was after doses of pilocarpin which did not, per se, produce slowing that I first observed the slowing influence of small doses of atropin. Pilocarpin creates an artificial vagotonia, and in larger doses, as is well known, produces pronounced slowing. The accompanying experiments give an idea of the action of small doses of atropin on the heart rate.

METHODS

Atropin sulphate was dissolved in sterile water so that 1 c.c. contained 1/60 grain or 1/30 grain (0.1 per cent. and 0.2 per cent.). The drug was injected hypodermically. The discussion refers to this method of administration, though in some cases it was taken by mouth with the same effect.

In all these cases the pulse was counted for the interval one-half or one minute. They are sufficient to show that small doses of atropin, when they affect the pulse rate, slow it only. With larger doses there may be a primary slowing, followed by the usual atropin effect due to paralysis of the vagus endings.

ANALYSIS OF THE ACTION

Atropin could cause a slowing of the heart rate by: (1) stimulating the vagus endings; (2) stimulation of the ganglions on the vagus, as nicotin does; (3) stimulation of the inhibitory center in the medulla, and (4) depressing the heart muscle directly. It has been shown above[7] that any influence of atropin on the vagus endings is paralytic, and consequently would tend to quicken the heart rate. However, Simon[9] states that after small doses of atropin, vagus stimulation results in a greater fall of blood pressure than before atropin. This might mean a stimulation of the vagus endings. Pilcher and Sollmann[3] could not confirm this observation. This point I am now investigating.

The heart muscle is not influenced even by doses of atropin that paralyze the vagus endings, and in isolated muscle preparations from the terrapin's heart are not influenced by a wide range of concentration of atropin.[10] Pilcher and Sollmann[11] found in anesthetized dogs that after section of the vagi, atropin

1. Roberts, S. R.: Types and Treatment of Pellagra, J. A. M. A. **75**: 21 (July 3) 1920.

* From the Laboratory of Pharmacology and Therapeutics, University of Illinois College of Medicine.

1. Dixon: Manual of Pharmacology, Ed. 4, 1915, p. 81.
2. Wood: Therapeutics, Its Principles and Practice, Ed. 14, 1908, p. 96.
3. Sollmann, Torald: Manual of Pharmacology, 1917, p. 280.
4. Stevens: Modern Materia Medica and Therapeutics, 1913, p. 76.
5. Green: Handbook of Pharmacology, 1914, pp. 113, 117.
6. Poulsson: Lehrbuch der Pharmacologie, 1920, p. 109.
7. Cushny: Pharmacology and Therapeutics, 1918, pp. 31, 318.
8. A. J. Ochsner, Chicago, and J. T. Halsey, New Orleans, in personal communications to the author.
9. Simon, J.: Arch. di farmacol. sperm. C. Scienze aff. **15**: 254, 1913; abstr. Therap. Montsh. **27**: 594, 1913.
10. Green: Handbook of Pharmacology, 1914, p. 117.
11. Pilcher and Sollmann: J. Pharmacol. & Exper. Therap. **5**: 318. 1913.

produced no increase in the rate; so they conclude that the muscle or intrinsic ganglions are not acted on by atropin. The heart muscle, therefore, is not depressed. So far as I can judge, atropin has little action on ganglion cells, since stimulation of the cervical sympathetic still elicits secretion of the salivary gland when the nerve endings of the chorda tympani are paralyzed by atropin. We may assume that the ganglions and endings on the vagus are influenced in the same manner. This leaves the centers as the point of attack by small doses of atropin.

There is, however, other evidence in favor of a central action. Child [12] has shown that in animal life there is a metabolic gradient, and that the anterior pole of an animal is more susceptible to drugs than the caudal pole. Taschiro [13] has shown that this holds true for the nervous system. Dixon also calls attention to the action of anesthetics which attack the nervous system according to the law of dissolution, i. e., the highest parts, or those last developed in the evolutionary scheme, are the first attacked. Consequently, the central parts of the nervous system are more influenced by drugs than the peripheral parts. Working on this hypothesis, if we anesthetize a dog, the depression of the vagus center is so pronounced that atropin will paralyze the vagus endings before it stimulates the depressed center. For this reason, small doses of atropin will not show a slowing of the pulse in the anesthetized animal, while it will in the normal animal.

When atropin is administered, therefore, the dose must be proportionate to the object in view. If the object in view is to eliminate vagus control from the heart, double the pharmacopeial dose is required, and this dose will be too small in some cases. It is well known that animals differ greatly in their susceptibility to atropin. For instance, rabbits may feed on the leaves of *Atropa belladonna* without any perceptible effect, and they react but slightly to atropin. Leonard W. Jones [14] calls attention to an adventure which indicates that children are less susceptible to atropin than are adults. My own work suggests that negroes are less susceptible than white persons, though to make certain, Dr. H. A. Paskind is making a special investigation of this point.

DOSIMETRIC TABLE

Schmiedeberg [16] compiles a dosimetric table, most of which I can confirm; and in addition, add a first member to the series. The following is the dosimetric table as I found it:

0.5 mg. (1/120 grain): Slowing of the pulse rate, with just a trace of dryness of the throat.

From 0.5 to 1 mg. (1/120 to 1/60 grain): Dryness of the throat with thirst; tendency to irregularity of the heart; slowing of pulse rate; in some cases there may be quickened pulse.

2 mg. (1/30 grain): Rapid pulse preceded by very transient and but slight slowing; some dilatation of the pupil, but not in all cases (negroes did not react with dose); one eye may dilate more than the other; pronounced thirst; pupils somewhat dilated later.

7 mg. (1/10 grain): Considerable dilation of the pupils; disturbance of vision; difficulty of swallowing and micturition; rapid heart; thirst; headache.

From 8 to 10 mg. (⅛ to ⅙ grain) by mouth: Excitement; hallucinations; flushed face, dry skin, in addition to the foregoing symptoms with smaller doses. These larger doses were observed after the accidental administration of the drug.

EXPERIMENT 1.—A man, aged 30, a genito-urinary case, was given 1/50 grain of atropin by mouth.

Time	Heart	Respiration
2:30	84	21
2:40	84	21
2:46	84	21
2:51	—	—
3:01	72	21
3:11	72	24
3:16	68	—
3:26	66	21
3:30	72	21
1/100 grain of atropin sulphate hypodermically		
3:35	72	24
3:40	72	28
3:45	72	28
4:00	72	26
4:15	72	24

EXPERIMENT 2.—A healthy man, aged 46, weight 175 pounds.

Time	Heart	Respiration
	82	20
9:30 1/120 grain of atropin sulphate in solution by mouth		
9:35	84	20
9:45	84	20
9:50	84	20
10:00	84	20
10:05	78	20
10:10	78	20
10:20	74	18
10:40	72	18
11:00	72	18
11:15	68	18
12:00	66	18

This result in man was duplicated in another healthy man, aged 24, weighing 180 pounds. In these cases there is some tendency to irregularity. Apparently the heart is on the verge of breaking away from the vagus control.

EXPERIMENT 3.—Healthy man, aged 20.

Time	Heart Rate
1:25	86
1:28	86
1:30	86
1:35	86
1/120 grain of atropin by mouth	
1:40	84
1:45	90
1:50	80
1:55	80
2:00	76
2:05	80
2:10	82
2:15	74
2:45	72
3:05	62
3:10	64
3:20	60
3:35	64
4:00	60
4:30	62

EXPERIMENT 4.—A negro, aged about 28.

Time	Heart	Respiration	Diameter of Pupil Mm.	
3:10	72	20	3.0	
3:15	..	..	...	1/30 grain of atropin subcutaneously
3:20	60	20	2.5	Small volume pulse
3:25	64	20	1.5	
3:35	60	20	1.5	Very small volume
3:45	..	..	...	
4:00	75	20	1.5	Says heart is excited and beats faster; frightened
4:15	78	20	1.5	

EXPERIMENT 5.—A negro man, aged about 30.

Time	Heart	Respiration	Diameter of Pupil Mm.	
3:15	72	18	2.5	
3:17	..	..	...	1/30 grain of atropin subcutaneously
3:20	72	18	2.0	
3:25	60	18	2.0	Small volume (pulse)
3:35	56	18	2.0	
3:45	60	18	...	
3:50	56	18	1.5	
4:00	70	18	2.0	
4:15	72	18	2.0	

12. Child: Origin and Development of the Nervous System, University of Chicago Press, 1921.
13. Taschiro: Am. J. Physiol., 1914, pp. 33 and 36.
14. Jones, L. W.: An Adventure in Atropism, J. A. M. A. **76**: 813 (March 19) 1921.
15. Compare also Green (Footnote 10).
16. Schmiedeberg: Grundriss der Pharmacologie, Leipzig, 1913, p. 178.

EXPERIMENT 6.—A white man, weighing 150 pounds.

Time	Heart	Diameter of Pupil Mm.	
1: 32	100	2.5	
1: 36	1 c.c. (1/30 grain) atropin sulphate hypodermically		
1: 40	100	2.5	
1: 45	96		
1: 50	106	not changed 2.5	
1: 55	116		
2: 00	128	2.0	
2: 05	132		
2: 10	132	2.5	
2: 20	130		
2: 25	128	R 4	
2: 40	122	4 4	Mouth very dry
3: 00	108	4 4	

SUMMARY

Small doses of atropin, if they influence the heart rate, only slow it. This slowing is produced by an action on the vagus center in the medulla. There may also be some stimulation of the vagus endings. Larger doses of atropin, 0.001 gm. (1/60 grain) still cause slowing, with a tendency to irregularity. This is the point at which the vagus endings begin to be paralyzed. If the dose is still further increased, 0.002 gm. (1/30 grain), the primary slowing of the heart rate may be so transient that it escapes notice. If the object in giving atropin is to paralyze the vagus endings and release the heart (presumably also to relax the smaller bronchioles), at least 1/60 grain, hypodermically, is necessary. In urgent cases, 1/30 grain should be given.

GASTRIC ANALYSIS

III. THE EXAMINATION OF THE ABNORMAL GASTRIC RESIDUUM *

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Various investigators [1] have said that the normal gastric residuum should not exceed 20 c.c. This conclusion was based on incomplete stomach evacuations by means of the old type stomach tube.[2] More accurate evacuations, made in our laboratory by means of the Rehfuss tube,[3] have demonstrated that the normal residuum averages about 50 c.c. in volume, a finding which has been verified by Fowler and Zentmire.[4]

The residuum, or the material found in the fasting stomach, represents the interdigestive phase of gastric activity. The latter term is used advisedly, as we have already pointed out, in other connections, that the stomach is never inactive. The term "empty stomach" is an erroneous one and should be discarded. In a recent contribution from this laboratory,[5] the mechanism by which the digestive phase merges into the interdigestive phase was discussed. Peristalsis ceases and the so-called peristole function comes into play, and with it are seen the tonal and hunger contractions. It is also probable that the tonus of the pylorus is reduced with more active intestinal regurgitation. In 55 per cent. of normal cases, bile is found in the stomach during the interdigestive period, and in practically all cases appreciable amounts of trypsin are found. From the secretory standpoint there is a marked lowering in the amount and the acidity of the secretion, as well as a distinct reduction in the velocity of its formation.

In the present article we shall attempt to offer a basis for the interpretation and study of the residuum, attempting to define normal limits and, where possible, point out pathologic variations. The accompanying table includes average data from the analysis of normal and abnormal residuums.

COMPARISON OF NORMAL AND ABNORMAL RESIDUUM

Determination *	Normal Findings	Abnormal Findings
Volume	50 c.c. (20-100)	In excess of 100
Food retention	Not found	May be present
Total acidity	30 (10-50)	70 and over
Free acidity	18 (0-30)	40 and over
Blood	Not found	Present
Pus	Not found	Present
Gastric mucus	Traces	Markedly increased
Pepsin index	2.8 Mett	Diminished
Trypsin index	9.1 ave. units	Diminished or plus
Cryoscopic index	—0.470	
Specific gravity	1.0056	

* Tube passed after simple lubrication and not with the addition of water, and the material aspirated in the upright and recumbent posture and on each side.

VOLUME OF RESIDUUM

The volume of the residuum is a matter of considerable importance, as an increase in the residuum means almost invariably an interference in the resumption of the interdigestive or rest phase of the stomach. In other words, the digestive period has encroached upon the interdigestive or rest phase. One hundred c.c. is merely selected as an arbitrary point, because in our experience wherever an increase in the residuum was of diagnostic importance, it equaled or exceeded this point. This does not for a moment invalidate the fact that serious organic disease may exist in the stomach in the presence of a residuum of normal quantity. On the contrary, the inference to be drawn from such a finding is the fact that the disease in question did not produce an alteration in the residuum so far as the quantity was concerned, but study would probably reveal that it had been altered in some other way. The second important point to determine is whether or not any increase is associated with food retention. This enables us to divide all increases in the quantity of residuum into two groups: Group 1, increase in volume without food retention—hypersecretory group, and Group 2, increase in volume with food retention.

Group 1 almost always belongs to the hypersecretory group, and indicates either a continued secretion as part of a high secretory output during the digestive period, which continues through the interdigestive period or indicates a permanent increase in secretory velocity. Both of these functional conditions may be seen with and without organic changes in the digestive tract. In the absence of any other finding, a marked increase in residuum in the absence of food retention may be due to a pure vagotonia, may be purely psychic, or it may be a tobacco hypersecretion. On the other hand, it is frequently seen in duodenal ulcer, less fre-

* From the Laboratory of Physiological Chemistry, Jefferson Medical College.

* The expenses of the researches on which this paper is based were defrayed by funds furnished by Mrs. M. H. Henderson.

1. Loeper: Leçons de pathologie digestive, Series 2, 1912, p. 17. Zweig: Magen- und Darmkrankheiten, 1912, p. 459. Kemp: Diseases of the Stomach, Intestine and Pancreas, 1912, p. 133. Wolff: Taschenbuch der Magen- und Darmkrankheiten, p. 22. Strauss, Riegel and Soupalt, cited by Loeper.

2. Harmer, T. W., and Dodd, W. J.: Sources of Error in the Use of the Stomach Tube for Diagnosis, Arch. Int. Med. **12**: 488 (Nov.) 1913.

3. Rehfuss, M. E.; Bergeim, Olaf, and Hawk, P. B.: Gastro-Intestinal Studies, J. A. M. A. **63**: 11-13 (July 4) 1914. Fowler, C. C.; Rehfuss, M. E., and Hawk. P. B.: J. A. M. A. **65**: 1021-1025 (Sept. 18) 1915.

4. Fowler, C. C., and Zentmire, Zelma: Studies of the Gastric Residuum, J. A. M. A. **68**: 167-170 (Jan. 20) 1917.

5. Rehfuss, M. E., and Hawk, P. B.: Gastric Analysis, J. A. M. A. **76**: 564 (Feb. 26) 1921.

quently in chronic appendicitis, and in a very small number of uncomplicated cholelithiasis cases. It, therefore, simply denotes a functional disturbance in secretory output which may or may not have its explanation in an associated organic pathologic condition. Among our patients we have two tobacco smokers who showed residuums of 400 and 210 c.c., respectively. One of these patients smoked twenty-five cigars a day. Another patient, nervous and very sensitive, with vagotonic manifestations and many of the findings of autonomic disturbances, showed a residuum of approximately 200 c.c. of pure secretion. As a general rule, however, this finding of a residuum of excessive volume is much more likely to be associated with organic disease, and duodenal ulcer is the prime offender. These findings are likely to occur in crises. We have seen, on several occasions, hypersecretory crises in which more than 1,000 c.c. of pure secretion was found in the stomach, to be followed in less than a week by return to normal residuum figures.

Group 2, or high residuum with food retention, is an extremely important one. In our experience, twelve hour retention or the persistent finding of an appreciable amount of macroscopic food in the stomach is always pathologic, and in 98 per cent. of cases is due to an organic lesion in or near the stomach. Nevertheless, in our studies on normal persons [6] we were able to demonstrate that overeating plus overindulgence in alcoholic beverages could undoubtedly produce twelve hour retention, a phenomenon which was not rare in preprohibition days. If dietary indiscretions exceed the factor of safety of the stomach, the normal digestive and interdigestive sequence will suffer, and temporary food retention may occur. This is not an infrequent event in the course of many acute illnesses, and is to be distinguished from the persistent retention seen in organic gastric disease. From our experience, cases which show food retention in the residuum, thus indicating prolongation of the digestive into the interdigestive phase, can be divided into the following groups:

A. Muscle defects:
   1. Atony—slight delay, but never twelve hour retention.
   2. Dilatation—persistent food retention.

B. Obstruction:
   1. Intragastric.
      (*a*) Neoplasm—one-half of all cases of gastric carcinoma.
      (*b*) Gastric ulcer—in about one-half of the cases.
      (*c*) Duodenal ulcer—in about 20 per cent. of cases.
      (*d*) Gastric syphilis—three out of eight cases in our series.
      (*e*) Benign tumors at pylorus—one case of fibroma seen.
      (*f*) Hypertrophic pylorus.
   2. Extragastric:
      (*a*) Tumors—commonest carcinoma of the head of the pancreas.
      (*b*) Adhesions and bands—from the gallbladder region to the first part of the duodenum and the pylorus.
      (*c*) Inflammatory masses involving the pylorus.

When there is persistent and distinct food retention, it is almost always due to an organic lesion at or near the stomach. Its presence is established by examination and, if necessary, reexamination after the administration of atropin to full dose. It is of no value to collect data regarding the incidence of food retention in carcinoma, for instance, as carcinoma of the pylorus is accompanied by early retention, and carcinoma of the body of the stomach or lesser curvature may progress to its termination without food retention. Taking all varieties, however, more than one half show retention. Contrary to our expectations, we are prepared to accept the dictum that ulcer of the duodenum is a more common cause of food retention than ulcer at the pylorus only, because it is numerically more frequent. Taking equal numbers of cases, retention is more frequent with gastric ulcer. We have seen pronounced food retention of the twelve hour type in three cases of gastric syphilis; in three cases of carcinoma of the head of the pancreas; in one case of chronic pancreatitis; in one case of fibroma of the pyloric outlet, and in six cases of adhesion formation, in all but two of which it was intermittent. On the other hand, we encountered one case of food retention with hypersecretion which persisted over a considerable time in a patient with renal stone and frequent colic. The importance of total and free acidity is largely embodied in the foregoing statement. A high total and correspondingly high free acidity belong to the hypersecretory type. If this finding occurs in crises, and the finding is associated with manifest deformity of the bulb on roentgen-ray examination, it is an almost pathognomonic complex of duodenal ulcer. On the other hand, about 40 per cent. of gastric ulcers show this phenomenon. A malignant ulcer can show precisely the same findings during the early stages. Total acidities which are low and are unaccompanied by demonstrable free acidity when associated with persistent retention are almost always due to malignant disease.

BLOOD

While it is true that imperfect stomach tube technic can readily account for the presence of blood in the stomach, its presence is nevertheless a matter of importance when careful technic is used, and particularly when the tip of the tube is coated with paraffin and the material siphoned off rather than aspirated. It is evident that this blood, and particularly occult blood in the residuum, may be due to either extragastric or intragastric causes. Swallowed blood is usually small in amount, discrete in appearance, aerated and floating on the surface of the specimen, and the microscopic examination of a residuum containing such blood usually shows some evidence of a lesion above the cardia. If it is microscopic, a test like the benzidin test will usually be found to be positive in streaks which on examination reveal epithelium not belonging to the stomach. The commonest causes are tonsillar, gingival or pyorrheal, postnasal, or even pulmonary hemorrhages.

Intragastric hemorrhages or intragastric blood are less commonly found than would be supposed in ulcer. On the other hand, this intragastric blood is found in more than 80 per cent. of the cases of malignant disease of the stomach. For example, in our own experience it was found in seven out of eight cases of gastric syphilis, and was practically constant in infected gastritis and achlorhydria hemorrhagica gastrica. Simple oozing from passive congestion, seen in portal hypertension, or in cardiac incompensation, can produce bleeding, and likewise hemorrhagic erosions. There is one form of stomach described by several writers, a single case of which we have observed, in which there was an almost constant oozing of blood from the stomach; but operation failed to disclose any evidence of a lesion on the exposed gastric wall.

6. Bergeim, Olaf; Rehfuss, M. E., and Hawk, P. B.: Unpublished data.

PUS

Pus should never be found in the gastric contents in health. With the exception of ulcerating carcinoma, gastric syphilis, infected gastritis, and the extremely rare acute phlegmon of the stomach or phlegmonous gastritis, pus should never be found in the stomach. And yet, in the last 400 cases, which alone were examined microscopically for the presence of pus, mucopus was found in 147, or 37.6 per cent. Ninety-two, or 23 per cent., of the patients had proved nose and throat affections, and only about 8 per cent. showed pulmonary lesions, and yet in each instance the presence of pus in the stomach was proof positive of a suppurative focus higher up. The unconscious swallowing of all individuals with infections in the nasal, oropharyngeal, and pulmonary tracts is too well known to merit description. The outstanding feature is the fact that the demonstration of purulent material in the fasting stomach is a most valuable method of demonstrating focal infections above the cardia. In at least 98 per cent. of cases, mucopus in the residuum is evidence of an extragastric focus. Not only does this method offer the most convenient means for demonstrating the possibility of such a focus, but the demonstration and eradication of such a focus is of cardinal importance in the study and therapy of resulting gastro-intestinal disturbances. We would suggest this study as a routine one in the investigation of the residuum. The fasting stomach can be considered as a drainage trap which collects much of the material draining from the postnasal, oropharyngeal and even the respiratory tracts, and the material which is difficult to demonstrate during the digestive period is surprisingly easy of demonstration during the fasting period when, owing to reduced acidity, the cellular picture is often intact.

CONCLUSIONS

1. The examination of the fasting stomach is in reality an examination of the interdigestive period of gastric activity.

2. The average normal findings and the mean variations are a basis for the interpretation of pathologic variations.

3. In the foregoing, the significance and the analysis of increased quantity, food retention, altered acidity, pus, blood and mucus have been discussed in detail. The general grouping of pathologic findings as suggested here is a simple means of interpretation of these findings.

4. The determination of swallowed mucopus as an evidence of focal infection above the level of the cardia is one of the simplest and most satisfactory means at our disposal for accurately determining the presence of an open focal infection.

5. The examination of the residuum is vitally important, as it is likely to reveal the presence of pathologic exudates which are obscured by the food material during the digestive phase.

Scarcity of Medicinal Herbs in Germany.—The *Medizinische Klinik* for February 13 states that the report of the Berlin chamber of commerce for 1920 shows that there was no domestic supply during the year of the medicinal herbs growing wild which are usually gathered for the drug market. It adds, "The reason for this deficiency is given as that the people who usually gather the wild herbs prefer the income from the new profession of being out of a job rather than the pay for the collected herbs. The amounts required had to be imported from other countries, while the plants rotted at home."

THE ROUTE AND RATE OF ABSORPTION OF SUBCUTANEOUSLY INJECTED SERUM

IN RELATION TO THE OCCURRENCE OF SUDDEN DEATH AFTER INJECTION OF ANTITOXIC HORSE SERUM *

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Most of the recorded cases of sudden death with symptoms of anaphylaxis which have resulted from injection of foreign proteins in man have followed subcutaneous injections. Furthermore, in most cases, the onset of the symptoms, and often the fatal termination, occurred a very few minutes after the injection. However, it should be impossible to produce death by subcutaneous injection of serum in ordinary amounts, because the normal rate of absorption from the subcutaneous tissues is very slow, and it is known from experimental anaphylaxis that in order to produce acute anaphylactic death the antigen must get into the circulation rapidly. This apparent discrepancy between fact and theory has been made the subject, at the suggestion of Dr. H. Gideon Wells,[1] of the investigation reported here.

In the sensitized guinea-pig, which seems to be the most highly sensitive animal to anaphylaxis known, it is difficult to produce acute anaphylactic death by a subcutaneous injection of antigen. Paul Lewis [2] found that from 6 to 10 c.c. of serum injected into a sensitized guinea-pig would not kill, and from the way the animals behaved he calculated that from 12 to 20 c.c. would be required to kill a sensitized guinea-pig, when injected subcutaneously. Rosenau and Anderson [3] injected 6 c.c. of serum subcutaneously into a series of sensitized guinea-pigs, and several of them died in acute shock. In a series of experiments outlined in the accompanying table I found 15 c.c. to be the smallest amount which, when injected subcutaneously, would cause death of sensitized guinea-pigs. If we take 6 c.c. as the minimum subcutaneous dose that will kill a 250 gm. guinea-pig, in proportion to body weight nearly 2 liters of serum would be required to kill a 70 kg. man, even if man could be as highly sensitized as a guinea-pig; and it is believed that he is not so reactive. Nevertheless, in spite of the difficulty of killing even the most readily sensitized animal known with a subcutaneous injection of antigen, a considerable number of cases of sudden death from anaphylaxis in man following the subcutaneous injections of horse serum have been described.

Rosenau and Anderson,[4] in their pioneer work on anaphylaxis, collected nineteen such instances from the literature, and state that they know personally of many more. Gillette [5] collected twenty-eight cases. Since these papers appeared, reports of sudden acute anaphylactic death occasionally appear in the literature. What Gillette has said about the instances that he collected appears to be true of all. "Practically all these cases have symptoms in common. In a few

* From the Otho S. A. Sprague Memorial Institute and the Department of Pathology, University of Chicago.

1. This work was begun several years ago (1912); but on account of the war and other interruptions, its completion has been delayed until this time.
2. Lewis, Paul: J. Exper. Med. **10**: 1, 1908.
3. Rosenau and Anderson: Bull. 45, Hyg. Lab., U. S. P. H. S., 1908.
4. Rosenau and Anderson: Bull. 29, Hyg. Lab., U. S. P. H. S., 1906.
5. Gillette: Therap. Gaz. **32**: 159, 1909.

minutes after receiving the injection they are seized with an intense dyspnea, followed by edema and urticaria. The action of the heart continues long after respiration has ceased. . . . When death terminated the reaction, only two cases lived longer than ten minutes after receiving the serum." Indeed, it seems true that the sooner any serum reaction appears after injection, the more severe it is. Wiley [6] describes a case of a man, aged 34, who was given a prophylactic dose of 1,000 units of antitoxin subcutaneously, 4 inches above Poupart's ligament. He suffered no pain, but spoke of the "lump that raised" when the needle was withdrawn. He remained in his chair from two to three minutes, and then began to scratch his head vigorously, complaining of not being able to breathe. Breathing became more and more labored, and he died in not more than five minutes after the injection. Boone [7] related that a boy, aged 10 years, with diphtheria, was given 4,000 units of antitoxin below the shoulder blade. Just as the syringe was laid down, the boy cried out and choked. He suffered difficulty in breathing and convulsions. He finally stopped breathing, and in from five to six minutes after the injection, he was dead. Von Pirquet and Schick,[8] in their monograph on serum disease, speak about a case they saw in which an immediate reaction followed subcutaneous injection of serum. From fifteen to twenty minutes after injection, the patient went into collapse and almost died, but later recovered. Another case is described [9] of a 5-year-old boy who was given a prophylactic dose of diphtheria antitoxin in the scapular region. Before the injection he was completely well. About five minutes after injection, the physician was recalled to find the child dead.

These cases of fatal anaphylaxis are inconsistent with what is known about the rate of absorption from the subcutaneous tissues, and the rate of appearance of antigen in the circulation in the amount necessary to produce death in a highly sensitized animal. Besides being proved by the bulk of clinical experience, the slow absorption of serum from the subcutaneous tissues has also been proved experimentally by testing for the time of appearance of horse serum in the circulation of an animal which has received a subcutaneous injection of this serum.

J. H. Smith [10] injected serums containing agglutinin for *B. coli*, and antitetanolysin and antitoxin for diphtheria, subcutaneously into goats, rabbits and man. By testing samples of blood drawn at different intervals after injection, he found that at the end of five hours in the case of the antitoxin only one tenth of the amount injected had been absorbed, and that the maximum amount in the circulation was not reached until from two to three days after injection. W. H. Park [11] finds that after the subcutaneous injection of diphtheria antitoxin, only 2 units per cubic centimeter of blood are found in the circulation, while after intravenous injection the same amount of blood after the same length of time contains 20 units. Lemaire [12] found by means of the precipitin reaction that at the end of two hours after a subcutaneous injection of antitoxin there was only a trace of horse serum in the circulation. It was most abundant at the end of twenty-four hours. Practically the same results were obtained in experiments by Pfeiffer and Friedberger,[13] Bullock,[14] and Morgenroth and Levy.[15]

Since guinea-pigs can be sensitized with extremely small amounts of horse serum, it was thought that the anaphylaxis reaction would be admirably suited for study of the rate of appearance of horse serum in the circulation after subcutaneous injection. It has been the method of choice with investigators to test an unknown substance for the presence of a suspected protein. Accordingly, in order to use the method for this purpose, a series of dogs was injected subcutaneously with various amounts of normal horse serum. At intervals after the injection, samples of the blood and lymph were injected into guinea-pigs. After a period of incubation these animals were reinjected with horse serum to test their sensitization by this substance, which might have been present in the blood and lymph of the dogs. However, even when it was more than probable that enough horse serum had been absorbed into the circulation of the dogs to produce sensitization of the guinea-pigs, negative results were always obtained. It was found that when definite amounts of horse serum were deliberately added to samples of dog serum, and injected into guinea-pigs, sensitization to the horse serum was not produced. As much as 0.1 c.c. in 10 c.c. of dog serum would not sensitize, even though 0.000001 c.c.[4] of horse serum alone will produce a high sensitization. Not only will dog serum inhibit sensitization to horse serum, but other serums (human, cat, beef) will do likewise, and these serums will also inhibit sensitization to dog serum if the proportions are reversed. Further experiments showed that not only serums but also solutions of pure proteins (egg albumin) in the proper amounts will inhibit sensitization to another protein. The analysis of these phenomena and a theory for their explanation form the subject matter of a paper previously published.[16] In it is suggested that in the animal body the number of receptors that will take up a protein as antigen are limited, and when two antigens are injected in very unequal proportions the antigen in the largest amount will saturate most of the receptors to the extinction of available receptors for the smaller amount. Since the amount of antibody production is proportional to the number of receptors affected, the effect of the antigen injected in the smaller amount is almost completely obscured.

While the anaphylaxis reaction was proved to be worthless for demonstrating the presence of small amounts of horse serum or other protein in the serum of another animal, the complement fixation reaction was found to be ideally suited for the purpose. The presence of foreign proteins does not interfere with it. As small an amount as 0.0001 of a cubic millimeter in 0.5 c.c. of dog serum can be plainly detected.

Having shown that an extremely small amount of horse serum can be detected when added to dog serum, it was sought to determine whether it can be detected in the same proportion in the circulating blood.

A dog weighing 15.8 kg. was used. According to the method of Welcker,[17] a dog of this weight has 1,216 c.c. of blood (7.7 per cent. of body weight). A 1:5,000 solution of horse serum

6. Wiley, S. N.: Sudden Death After Injection of Diphtheria Antitoxin, J. A. M. A. **50**: 137 (Jan. 11) 1908.
7. Boone, E. L.: Sudden Death Following Use of Diphtheria Antitoxin, J. A. M. A. **50**: 453 (Feb. 8) 1908.
8. Von Pirquet and Schick: Die Serumkrankheit, Leipzig, Deuticke, 1905.
9. A note in Medical News, April 11, 1896.
10. Smith, J. H.: J. Hyg. **7**: 205, 1907.
11. Park, W. H.: Boston M. & S. J. **168**: 73, 1913.
12. Lemaire: Compt. rend. Soc. de biol. **60**: 578, 1906.
13. Pfeiffer and Friedberger: Zentralbl. f. Bakteriol. u. Parasitenk, I, **37**: 131, 1904.
14. Bullock: J. Path. & Bacteriol. **5**: 274, 1898.
15. Morgenroth and Levy: Therapeut. Monatsh. **23**: 6, 1909.
16. Lewis, J. H.: J. Infect. Dis. **17**: 241, 1915.
17. Welcker: Ztschr. f. rat. Med. **4**: 147, 1858.

was made, and 7.5 c.c. of this was injected intravenously into the dog. This amount of horse serum gave approximately a concentration of 1 : 1,000,000 in the dog's blood. After an interval of four minutes to allow for thorough mixing, a sample of blood was withdrawn from a leg vein of the dog. The serum was tested with the complement fixation test for horse serum. Although there was not complete inhibition of hemolysis, a sufficient inhibition was found to be called a positive reaction.

A dog weighing 12 kg. was injected with 5 c.c. of a 1 : 500 solution of horse serum directly into the blood stream. This amount of horse serum gave approximately a 1 : 100,000 dilution of horse serum in the dog's blood. The serum from a sample of blood withdrawn four minutes after injection gave an almost complete inhibition of hemolysis when tested with the complement fixation test for horse serum.

The relation of the concentration of foreign serum that must be present in the blood of an animal, in order that it can be detected by the complement fixation reaction, to the concentration that must be present to produce anaphylactic shock, is of importance in this connection. According to my experiments, complement fixation detects a concentration of horse serum in dog serum of from 1 : 100,000 up to 1 : 1,000,000. The minimum fatal intravenous dose of horse serum for a sensitized guinea-pig (from 0.00001 to 0.000001 c.c.) represents a concentration of from 1 : 200,000 up to 1 : 2,000,000, or approximately the same concentration as the amount detectable by complement fixation.

In order to determine the normal rate of absorption of horse serum from the subcutaneous tissues, a dog, after the removal of a sample of normal blood, was injected subcutaneously with 10 c.c. of horse serum and, at various intervals up to twenty-four hours after injection, samples of blood were taken. These samples, with the normal sample, were tested by the complement fixation test for horse serum. The results show that detectable amounts of horse serum first appear in the circulation one and one-half hours after injection and are present for the entire twenty-four hours. This result confirms those obtained by investigators with other methods, in that it shows that horse serum is absorbed from the subcutaneous tissues slowly and that it does not appear in the circulation rapidly enough to account for the acute anaphylactic deaths and the severe reactions which occur suddenly in men after antitoxin administration.

The reason that subcutaneous absorption is slow is probably that it takes place through the lymphatics, where the movement of the lymph is much slower than that of the blood. A review of the literature on the route of absorption from the subcutaneous tissues shows conflicting opinions as to whether it is lymphatic or vascular. All the experiments described were made with easily diffusible substances. Because of the confusion that exists, and since none of the experimenters used serum, a study of the route of subcutaneous absorption was made by means of the complement fixation test.

A dog under ether-morphin anesthesia was injected subcutaneously with horse serum. Samples of lymph taken from a cannula in the thoracic duct (the duct being excluded from connection with the vein), and of blood from a leg vein taken at various intervals after injection, were tested with the complement fixation test, horse serum being used as antigen. It was found that the first trace of horse serum appeared in the lymph forty minutes after the injection, and in the blood three and one-half hours after injection.

The experiment indicates that the main route of absorption is by the lymphatics, but that probably some absorption takes place through the blood vessels. However, it may be that the presence of horse serum in the blood can be explained by some connection between the lymphatics and the blood vessels other than at the mouth of the thoracic duct.

There must be, then, factors other than extreme sensitization to explain the occurrence of sudden death and immediate severe reactions after subcutaneous injections in man, because, even if extreme sensitization existed, the absorption from the subcutaneous tissues is not rapid enough to meet the requirements for a fatal or a severe reaction. Whatever these factors are, they must operate to produce the rapid appearance of the horse serum in the circulation. It is a common practice among physicians to massage the wheal produced by serum injections in order to promote absorption. It is possible that this procedure forces the serum from the subcutaneous spaces into the lymphatics, and therefore it reaches the circulation much sooner than by the usual process of absorption. In order to test this possibility, a series of guinea-pigs was sensitized by an intraperitoneal injection of horse serum; after a period of incubation they received various doses of horse serum subcutaneously, and the effect of massaging the site of injection was observed. The results are seen in the accompanying table.

EFFECT ON THE PRODUCTION OF ANAPHYLACTIC SYMPTOMS IN SENSITIZED GUINEA-PIGS OF MASSAGE OF THE SITE OF INJECTION OF THE SECOND DOSE OF ANTIGEN

Guinea-Pig.	First Injection C.c.	Second Injection of Horse Serum, 17 Days Later, Subcutaneously C.c.	Results
1	0.1	1	Showed slight symptoms; recovered
2	0.1	1	Showed slight symptoms; recovered
3	0.1	5	Showed definite symptoms; recovered
4	0.1	5	Showed very severe symptoms; recovered
5	0.1	10	Showed definite symptoms; recovered next morning
6	0.1	10	Showed very acute symptoms; recovered in one hour
7	0.1	15	Showed symptoms immediately; dead next morning
8	0.1	15*	Dead in five minutes
9	0.1	20	Showed acute symptoms immediately. Respiratory convulsions; recovered next morning
10	0.1	20*	Dead in forty-five minutes

* Massaged.

It is shown that a dose of horse serum which is not large enough to kill a sensitized guinea-pig when injected subcutaneously will kill quickly when the site of injection is vigorously massaged. The only feasible explanation of this fact is that the massage forces the serum into the circulation through the lymphatics. Another experiment designed to test the same idea is as follows:

A dog under anesthesia was prepared so as to obtain samples of lymph from the thoracic duct and of blood from a leg vein. Horse serum (10 c.c.) was injected subcutaneously on the abdomen, and the site of injection was immediately massaged vigorously. A sample of blood and lymph was taken immediately and at intervals of five minutes thereafter. There was a positive test for horse serum in the sample of lymph collected during the interval fifteen or twenty minutes after injection, and in the blood two hours after injection.

When compared with a similar experiment without massage described above, this experiment indicates that massage hurries the appearance of the horse serum in the circulation.

A further proof that substances can be forced into the lymphatics is the method which anatomists use in injecting the lymphatics of the subcutaneous tissues. A heavy substance like mercury is forced under the skin under high pressure. When sections are made of such an area, the lymphatics are found clearly outlined, owing to the presence of the easily stained mercury which was forced through the tissues along the lymphatics. An experiment designed to imitate this experiment of the anatomists was carried out as follows:

A large dog was anesthetized and prepared as in the preceding experiment so that samples of thoracic lymph and blood could be obtained at various intervals. About 200 c.c. of horse serum was forced from a pressure bottle, by means of compressed air, into the subcutaneous tissues of the abdomen. Such an injection produced a large board-hard lump about the size of an ordinary orange. The samples of blood and lymph were tested for horse serum by the complement fixation test. The sample of lymph obtained the first five minutes after injection gave a complete inhibition of hemolysis. The serum of the blood taken forty minutes after the injection showed the first traces of horse serum.

The effect of the extremely high pressure is clearly shown in the immediate appearance of horse serum in the lymph and its early appearance in the blood.

Although certain procedures can hasten the appearance of horse serum injected subcutaneously into the circulation, it is certain that in most cases they are not practiced. The usual history in fatal cases is that symptoms appear just after injection is made, usually before there is an opportunity for manipulation. It is very probable that in these unfortunate cases the injections are accidentally made into the blood stream. The subcutaneous tissues contain numerous blood vessels of good size, and it is quite possible for the point of the hypodermic needle to enter one of these vessels, emptying the contents of the syringe into the circulation. In order to produce death only a small amount need be injected into the circulation of a highly sensitized individual. Boughton [18] reports a fatal reaction following immediately after intravenous injection of 1 minim of horse serum into a man with horse asthma. The possibility of an accidental intravenous injection is made more probable by the experiences obtained after the subcutaneous injection of oils and fats. Fat embolism has occurred after such injections, and any possible cause of the fat embolism, other than accidental intravenous injection, apparently can be ruled out. Moeller [19] reports fat embolism occurring forty-three times in 315 patients injected subcutaneously with oily substances 3,835 times. Ebstein [20] found fat embolism seven times in 908 patients injected 8,292 times. Febriger [21] reports a case in which death followed subcutaneous injections of olive oil for nourishment made necessary because of a stricture of the esophagus. On the twentieth day of injection the patient coughed violently while the injection was being made, became cyanotic, suddenly collapsed, and became unconscious. In three hours he developed hemiplegia. The postmortem examination revealed fat emboli distributed all over the body. Heidingsfeld [22] emphasizes the fact that fat embolism occurs very often from paraffin prosthesis and from injections of mercury in oily menstruums.

18. Boughton, T. H.: Anaphylactic Death In Asthmatics, J. A. M. A. **73**: 1912 (Dec. 27) 1919.
19. Moeller Arch. f. Dermat. u. Syph. **37**: 420, 1896.
20. Ebstein: Allg. med. Centralbl., 1897, p. 49.
21. Febriger, quoted by Heidingsfeld: Lancet-Clinic **50**: 276, 1903.
22. Heidingsfeld: J. Cutan. Dis. **24**: 513, 1906.

The probability of accidental intravenous injections as the cause of sudden death emphasizes the need of care to ascertain whether a blood vessel is injured by the needle before a subcutaneous injection is made. Before the injection begins, an aspiration of the subcutaneous tissues should be made in order to see whether blood can be pulled into the syringe.

CONCLUSIONS

The complement fixation test can be used to detect extremely small amounts of one serum in the presence of larger amounts of another.

The absorption of serum from the subcutaneous tissues is very slow.

The main route of absorption from the subcutaneous tissues is through the lymphatics.

The rate of absorption of horse serum injected subcutaneously is apparently too slow to explain the cases of sudden anaphylactic death which have occasionally followed the administration of antitoxic serums in man.

Certain procedures, such as massage of the site of injection, and the injecting of large volumes under high pressure, can hasten the appearance in the circulation of horse serum injected subcutaneously.

Because of the suddenness with which it appears, and because of the analogy to the occurrence of fat emboli after the subcutaneous injection of oily substances, acute anaphylactic death in man following subcutaneous injections of horse serum is probably due to an accidental intravenous injection of the serum.

The need of care to exclude as far as possible the injury of a subcutaneous blood vessel during subcutaneous injection of horse serum is indicated.

HEMOGLOBINURIA AFTER A SECOND TRANSFUSION WITH THE SAME DONOR *

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Blood transfusion has been made almost completely devoid of danger by testing in vitro, before the transfusion, for the compatibility of the blood of donor and recipient. In the early days of transfusion, slight, serious or even fatal results were not an infrequent occurrence.

There are now many reports of large series of transfusions made after the blood tests had been performed, and only occasionally has a reaction occurred because of the presence of agglutinins or hemolysins for the red cells of either the donor or the recipient. Reference is made here only to reactions due to agglutinins or hemolysins, not to rise of temperature or chills, such as might follow any intravenous injection. The cause of some of these unfavorable reactions due to agglutinins and hemolysins, even after the bloods have been tested, might be explained by the case reported here.

REPORT OF CASE

A boy, aged 6, admitted to Columbia Hospital, Nov. 15, 1920, with a severe, afebrile attack of purpura, whose family and past history was unimportant, was well up to seven days before admission, when he first had nosebleed. The nosebleed continued intermittently for seven days; then bleeding from the gums, blood in the stools, many large and small hemorrhages in the skin, and bruise marks distributed over the entire body.

* From the Laboratories of Columbia Hospital.

November 16, hemoglobin was 40 per cent; red blood cells, 2,220,000.

November 18, citrate blood transfusion of 300 c.c. was performed, the patient's father being the donor. The temperature rose to 103 several hours after transfusion and shortly returned to normal, no other reaction occurring. The bleeding from the nose and gums ceased, and the old hemorrhages rapidly cleared up. The stools became free of occult blood. No new hemorrhages or other untoward symptoms appeared. The urine examination immediately after the transfusion detected no albumin, sugar, hemoglobin or casts.

November 22, hemoglobin was 46 per cent; red blood cells, 2,300,000; platelets, 10,000.

November 26, hemoglobin was 52 per cent.; platelets, 12,500.

November 29, hemoglobin was 53 per cent.; platelets, 10,000.

December 3, hemoglobin was 55 per cent.; platelets, 15,000.

A few very small, scattered hemorrhages began to appear in the skin, and the patient had a very slight nosebleed.

December 6, hemoglobin was 63 per cent.; red blood cells, 3,300,000; platelets, 11,600. A citrate blood transfusion of about 150 c.c. was performed, the father being the donor. When 150 c.c. of citrated blood had entered the vein, the patient complained in rapid sequence of tingling in the face, legs and feet, and then burning in the feet. His face first became extremely pale, and in two or three minutes marked flushing occurred, especially around the eyes, and of the cheeks, the nose and eyelids remaining very pale. The skin over almost the entire body became peppered with minute, pinpoint, bright red hemorrhagic spots, probably from capillary emboli of agglutinated transfused blood cells. With the pallor the pulse became almost imperceptible. The transfusion was stopped with the onset of the first symptoms, and in about three minutes the pulse returned to good volume but was very rapid, at the rate of about 140. The patient was returned to his room in about half an hour, and was in fairly good condition.

Shortly afterward there was a severe chill, lasting forty-five minutes, and emesis of undigested food. The temperature was 102.6. The patient then complained of marked difficulty in breathing, and the breathing was found to be irregular, deep and rather jerky. He also had a severe pain in the epigastrium, and the bedclothes had to be lifted from his abdomen, as the weight of them intensified the pain. About two hours after the transfusion the patient voided about 6 ounces of very dark, hemoglobinuric urine. Twelve hours after the transfusion the patient again voided hemoglobinuric urine, which, however, was lighter in color than the previous specimen. Both of these specimens contained great numbers of coarsely granular, hemoglobin-tinged casts, but no red blood cells. There was no sugar present. Sixteen hours after the transfusion, the urine which was voided was light yellow, but a considerable number of hemoglobin-tinged casts were still present. Three days after the transfusion, the urine was perfectly normal.

December 7, hemoglobin was 55 per cent.; red blood cells, 3,350,000. The hemoglobin was 8 points lower than on the day of the transfusion, but the red count was 250,000 cells higher.

December 9, hemoglobin was 62 per cent.; red blood cells, 3,300,000; platelets, 10,000.

December 15, hemoglobin was 69 per cent.; platelets, 7,500.

The patient was discharged free from hemorrhagic spots in the skin and from bleeding of the nose, gums, etc. His general condition was much improved, and his color was considerably better than when admitted.

Feb. 5, 1921, the blood platelet count was 11,000 (by a new method,[1] 25,800).

COMMENT

There is much convincing proof available that it is possible to make preliminary tests for iso-agglutinins or isohemolysins accurately, if they are present in sufficient amount to cause any *serious* reaction. Many simple macroscopic and microscopic methods have been devised for these tests.

In the case reported above, a boy was transfused with his father's blood. A direct test of these bloods, made both by macroscopic and by microscopic methads, detected no agglutinins. The transfusion was performed by the citrate method and was followed by only a mild febrile reaction. Eighteen days later a similar transfusion was performed with the same donor, and after about 150 c.c. had been given, a most severe and unexpected reaction occurred. The transfusion was, of course, immediately stopped, and a few hours later the patient voided very dark, hemoglobinuric urine. This showed that hemolysis had occurred, and explained the reaction. The cause of this intravascular hemolysis was also subsequently discovered.

Two tests were overlooked in preparing for these transfusions. Had these been performed, another donor would have been selected, and the agglutinative and hemolytic phenomena would not have taken place. Yet on superficial examination it would seem that all the necessary precautions had been taken. A direct test of the bloods gave absolutely no agglutinins or hemolysins. This was further demonstrated by absence of agglutination or hemolysis after the first transfusion. The success of this led to the omission of the tests before the second transfusion. It is known that in many instances repeated transfusions have been made with the same donor and recipient with no bad results. This case, together with some experimental transfusions, that were made in animals,[2] demonstrates the necessity of performing tests before each transfusion, even though the same donor, who was previously satisfactory, is used.

The two errors were: (1) performing only direct tests on the two bloods and not also determining the blood groups; (2) not repeating the direct tests before the second transfusion.

Several weeks later the blood groups (Jansky[3] nomenclature) showed the patient to belong to Group I, and the donor (the patient's father) to Group III.[4] This should have been known before the first transfusion, as even though the direct tests were satisfactory, Group III blood would not have been transfused into a Group I patient.[5] Group I blood always contains agglutinins for the blood of all other groups. Occasionally the agglutinins in both Groups I and III are very weak and fail to give a clear-cut test. The cells of all four groups, however, always react typically with strong Group II and III serum. Therefore, with proper Group II and III serum, one is always able to determine the blood group of an individual, even though his serum is weak in its specific group agglutinins.

It is only comparatively recently that the method of blood grouping has been used in testing out donors for transfusions. Previously, the method of direct tests was the only one available. In the direct test the serum of the patient is mixed separately with the washed red blood cells of each prospective donor, and the donor's serum with the patient's cells. The microscopic method is quite satisfactory and is extensively used, but it is believed that with this method weak agglutinins might be missed or confused with the unimportant phenomenon of rouleaux formation. The macroscopic, small

1. According to a new method, obtained from Dr. Nathan Rosenthal, to one drop of 25 per cent. sodium citrate in a small test tube, 1 c.c. of blood is added. This is allowed to stand for thirty minutes, and the blood platelets are counted in the supernatant plasma by diluting 1: 10 or 1: 20 in an ordinary counting chamber. The method previously used was that devised by Ottenberg and Rosenthal (J. A. M. A. **69**: 999 [Sept. 22] 1917). Dr. J. Zuercher made the blood platelet counts.

2. Ottenberg, Reuben, and Thalhimer, William: J. M. Res. **33**: 213-229 (Nov.) 1915.

3. Jansky: Sborn. Klin. **8**: 85, 1907.

4. The mother belongs to Group II, but this has no significance so far as the case is concerned.

5. Whereas it is perfectly safe to transfuse Group I blood into a patient belonging to any of the other three groups.

pipet method of Epstein and Ottenberg [6] will detect very small amounts of agglutinins and hemolysins, and no confusion can arise from rouleaux.

In the blood group method the group of the patient and the donor is determined, and only a donor belonging to the same group as the patient, or to a compatible group, is used. This test is very simple, has become widely used, and until recently has been generally considered to be sufficient to guard against accidents. Karsner [7] and Unger,[8] indlvidually, have lately emphasized the opinion of many, that after determination of the blood groups, the direct test should then be performed with the blood of the patient and the selected donor. Only if this direct test is also satisfactory should the transfusion be performed.

The experiments of Ottenberg, Kaliski and Friedman,[9] and of Ottenberg and Thalhimer,[2] have shown that multiple transfusions in animals, the same donor being used, cause agglutinins and hemolysins to develop in the recipient animal for the cells of the donor animal, which were not originally present in the recipient. After several transfusions, each successive one will be followed by hemoglobinemia and hemoglobinuria. If agglutinins alone are originally present, repeated transfusions from the same donor will first cause these agglutinins to become stronger and then soon cause hemolysins to develop. It is to be regretted that, these facts being known, the second transfusion was attempted in this case without repeating the direct tests.

These considerations lead to the following deduction as to what occurred in the case reported: The patient belonged to Group I, and his serum was so weak in agglutinins for his father's Group III cells that the direct test, even with the pipet method, failed to reveal them. They were also so weak that they did not cause agglutination or hemolysis of the father's blood at the first transfusion.

It is even possible that the Group I agglutinins had not yet developed in the patient's serum. There are no data concerning this, as the bloods were not grouped originally. Decastello and Sturli [10] have demonstrated that the agglutinin proper to the group to which the individual belongs is sometimes absent in children, the susceptibility of red cells (agglutinogen) developing earlier than the corresponding agglutinin. The father's blood did not contain agglutinins for the patient's cells, as Group I (patient) cells are not agglutinated by the serum of any of the other groups. The second transfusion was performed eighteen days after the first. In the meantime, owing to the injection of Group III cells into a Group I individual, strong enough agglutinins and hemolysins developed to cause the serious reaction reported. It was possible to demonstrate this and also to show that no other element in the transfusion was responsible for this reaction.

Some of the blood prepared for the second transfusion was not used and was saved. This blood contained 0.2 per cent. sodium citrate. A flask of it kept overnight in the icebox remained fluid; the cells sedimented normally, leaving a supernatant fluid untinged with hemoglobin. To make sure that the 2 per cent. citrate solution used for citrating the blood did not contain too much citrate, a measured portion of this was evaporated to dryness. The amount of sediment was slightly less than 2 per cent.

The day after the second transfusion, a sample of the patient's blood was obtained which was normal in appearance and the serum was not colored by hemoglobin. This was found to agglutinate quite strongly the father's washed cells, which had been saved. The agglutinins were not very strong, however, being decidedly weaker than those usually present in Group I serum. The clumps were small but firm, and could not be broken up. Hemolysins were also present, as the serum in the pipet became tinged with hemoglobin. This test was repeated sixty-one days later with the same result.

One more deduction of a more general nature should be recorded here as a possibility. This has to do with possible partial agglutinins, which is still an unsettled question. It is recognized that occasionally there is difficulty in finding a suitable donor for some peculiar, severe cases of chronic anemia. Even when individuals of the same blood group are tested, it is found that the tests are not clear cut. There is vague or slight agglutination in the direct test, especially when the Epstein and Ottenberg [11] method is used. This agglutination is considered by some to be caused by partial agglutinins. It is especially in these cases that, following the blood grouping, the direct test should be made. It is possible that these slight or partial agglutinins may account for some reactions which occur, even when whole blood is transfused, and when only the blood groups have been determined.

One may draw these conclusions from the foregoing data. Neither the blood group method nor the direct test alone is sufficient to safeguard against the danger of agglutination or hemolysis occurring after a transfusion. It is believed essential that both of these tests be performed. This is especially true in transfusing children, whose agglutinins are more likely to be weak than is the case with adults. The two types of tests, if they serve no other purpose, serve as a check on each other.

If the same donor is used for more than one transfusion on the same individual, the direct tests must be made each time before each transfusion. This is necessary because agglutinins and hemolysins originally absent may develop against a donor's blood when the donor is used more than once in the transfusion of the same patient.

6. Two or three parts of serum are mixed in small, straight Wright pipets with one part of a 5 per cent. washed cell suspension. Two bubbles of air are introduced as mechanical mixers. The tubes are sealed, incubated for from fifteen to thirty minutes, and then read by rotating and slanting from side to side so as to move the bubbles of air rapidly through the mixture. If no agglutinins are present, a uniform mixture of cells occurs. The usual amount of agglutinins causes one or several dense clumps to form which cannot be broken up. Even small amounts of agglutination cause a fine, granular appearance which is easily detectable.

7. Karsner, H. T.: Laboratory Problems of Blood Transfusion, J. A. M. A. **76**: 88 (Jan. 8) 1921.

8. Unger, L. J.: Precautions Necessary in the Selection of a Donor for Blood Transfusion, J. A. M. A. **76**: 9 (Jan. 1) 1921.

9. Ottenberg, Reuben; Kaliski, D. J., and Friedman, S.: Experimental Agglutinative and Hemolytic Transfusions, J. M. Res. **28**: 141 (May) 1913.

10. Decastello and Sturli: München. med. Wchnschr. **49**: 1090, 1902.

11. Epstein, A. A., and Ottenberg, Reuben: The Diagnostic Value of Hemolysis in Cases of Cancer, Arch. Int. Med. **3**: 467 (June) 1909.

Ready-Made Medicines.—The most serious harm in ready-made medicines is the perpetual suggestion that in order to keep well one must constantly be dosing himself. Just the opposite is true. It would seem that more rigid supervision of ready-made medicine should be exercised by responsible authorities. We go to considerable trouble to see that milk is fairly free from germs. All cities go to great expense to get pure water, and yet the loss of time from using ineffectual symptomatic remedies and the danger from habit-forming drugs would seem just as important as the care of water and milk.—G. Dock, *J. Missouri M. A.* **18**:84, 1921.

Clinical Notes, Suggestions, and New Instruments

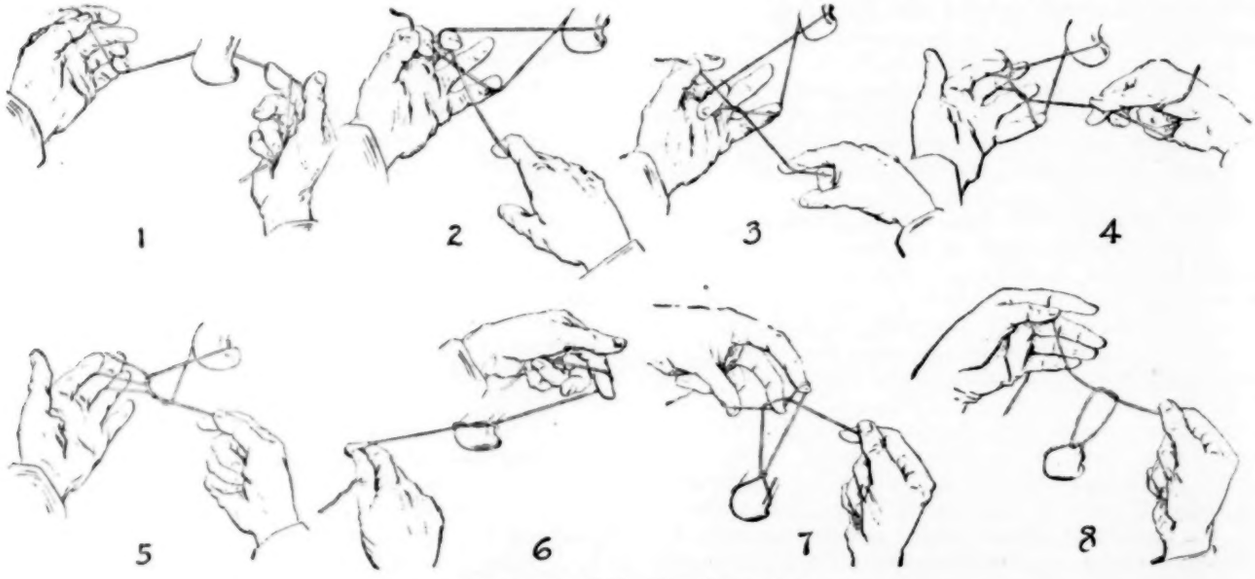
METHOD OF TYING A FLAT KNOT

E. L. ELIASON, M.D., PHILADELPHIA

My experience with resident physicians as surgical assistants in hospitals and also with students who act as assistants in our course given them at the University Hospital, in practical minor surgery, leads me to publish this method of tying a flat knot.

No originality is claimed for the method, nor is it brought forward as the best method. It is, however, an easy and simple way of rapidly placing a knot. We all know how much trouble kinked and curling catgut causes the beginner when he attempts to tie a knot.

The accompanying illustrations show the method better than any text description. It can be seen that throughout the entire procedure the ligature extremities are always within the control of a new grasp before the old grasp is released. This is a distinct advantage which is instantly recognized when one has acquired the method.



Successive steps in the tying of a flat knot.

I have been so often requested to demonstrate the method in instruction, both to students and to residents, that it may be considered advisable to publish it even though it may possibly not be the first appearance in print.

330 South Sixteenth Street.

AN UNUSUAL TRANSVERSE POSITION

HENRY H. SKINNER, M.D., YAKIMA, WASH.

Mrs. D., aged 39, a secundipara, whose family history was negative, and whose personal history was negative, or at least had no bearing on the case in question, presented herself for examination and observation at the beginning of about the fourth month of pregnancy. Up to that time she had been having little or no discomfort from morning nausea and no vomiting, but complained of considerable pain, for which there was no apparent cause, which troubled her continually and increasingly throughout gestation.

Faint traces of albumin were found in the early specimens of urine, but no casts at any time. Her blood pressure, at first 120 systolic and 90 diastolic, rose in the eighth month to from 140 to 144 systolic and 100 diastolic, being influenced not at all by restrictions in protein diet. The day set for confinement was February 24. About a month before the expected termination of gestation, she informed me that for two or three days she had been passing a little blood, which really amounted to merely blood-stained mucus, and at no time showed any larger amount, but which, in view of what was found later, was really significant. Early in the eighth month, abdominal examination showed that the child was in a transverse position, floating in a large amount of hydramnios. The heart tones were heard faintly but distinctly about 2 inches to the left of, and an inch below the umbilicus. No attempt was made to rectify the position.

Labor set in on February 11, thirteen days before it was expected, beginning at 8 a. m. Uterine contractions soon occurred every three minutes, not very hard. There was so much hydramnios that it was difficult to find the position of the child, but it was undoubtedly transverse. Vaginal examination revealed a good bag of waters protruding through a cervix dilating well; but no presenting part was to be felt—a rather queer sensation. As rupture of the membranes was feared, the examination was not made as under normal circumstances; therefore the marginal placenta found later was not discovered. Owing to the large amount of water present, it was difficult to find the location of the head. The fetal heart tones could be heard most faintly in the same place indicated above, but the location of the head in the right iliac fossa was not determined until the patient had been turned first on one side and then on the other, in which positions the head and the buttocks were brought out more distinctly. Even then the diagnosis that the chest was presenting at the pelvic inlet did not come to mind, but rather that it was a transverse presentation back down, or, technically, scapulodextra anterior presentation. Although the pains were coming every two minutes, an effort was made to float the child into a more favorable place, and without much difficulty the head was brought down into the pelvis, the buttocks swung under the ensiform and the two parts held in position by rolls of towels held tightly in place by a binder, the patient being instructed to lie on her left side. Scopolamin and morphin were given to relieve suffering until dilation could be completed. Within a short time the membranes ruptured and the pains became more severe. A few hours later the second examination was made, finding the cervix completely dilated, the right hand presenting and the face of the child off to the right. As it was recognized that the child could not be born presenting in that manner, since the flexion of the head would be occurring more and more with each pain, which would ultimately result in a chin presentation, arrangements were made at once for podalic version.

This was accomplished with the assistance of Miss Florence Rutt, the office anesthetist, and Dr. A. J. Helton. The patient was placed across the bed with two nurses holding the limbs in position. The vaginal outlet was dilated slowly as much

as possible with the entering hand, time being taken to accomplish this. The placenta was found to the left down in the pelvic inlet and of marginal type, near enough to the cervical edge to have caused the slight bleeding two or three weeks previously, and yet not sufficiently near to have caused any other hemorrhage. The right foot was easy to procure, and although the posterior one in this case, it was brought down; but a peculiar thing occurred at this point: Whenever traction was made on that foot, the head would slip to the left and the ankle slide behind the occiput, which could not be dislodged. After attempting several times and not getting anywhere, even with Dr. Helton's efforts, to turn the baby from the outside at the same time traction was being made, an effort was then made to reach the other foot. This was very difficult, as the left foot proved to be behind the baby and the knee at the extreme upper pole of the fundus. When finally procured, with both feet then in the hand, it was easy to proceed with the version, rotating the sacrum to the anterior. Of course both hands were over the head, but were quite easily controlled by hooking one finger into the elbow and rotating the corresponding shoulder away from the finger. The cord was discovered to be once around the neck. The head was expressed comparatively easily. The child, a boy, weighed 6½ pounds. He developed a right Bell's palsy which continued about twenty-four hours: no other complications or sequelae were observed in either mother or child.

CONCLUSIONS

Because of the low implantation of the placenta:

1. It caused uterine uneasiness during gestation, accounting for the mother's discomfort.
2. It also accounted for the surreptitious bleeding the last few weeks of gestation.
3. Its presence in the lower uterine segment, and, so much of it in one side of the pelvic inlet, did not allow the head to engage, therefore causing the transverse position: a scapuloleva anterior.

HYPOTHYROIDISM AND UNDERACTIVITY OF THE SUPRARENALS CORRECTED BY GLANDULAR THERAPY

LEON VINCENT KEAR, M.D., OYSTER BAY, N. Y.

History.—D. T., a boy, aged 7½ years, was brought for examination Dec. 15, 1920, because, in the parents' estimation, he was not making satisfactory progress, since his growth had remained stationary as to both height and weight.

He evidenced no desire to partake of the pastimes of the normal growing boy. He was lethargic and preferred lounging about and perusing picture books to playing outdoors with other boys of his own age. He was easily fatigued. His lack of initiative was evident. He was extremely timid, so much so that he was always accompanied to and from school by one of the adults of the household. He was slow to assert himself and entirely lacking in aggressiveness. When interrogated, he was slow to answer, and a spirit of negativism seemed to predominate his mental sphere. He had whooping cough in 1917, measles in 1918 and scarlet fever in 1919. The family history was negative.

Examination.—The patient's features were distinctly senile. He was short and otherwise undeveloped for his age. He was 3 feet, 8 inches tall and weighed 35 pounds. The skin was cool and clammy; the teeth were in fair condition, and the throat was negative. The thorax showed no abnormalities of contour. The ribs were prominent, the intercostal spaces being rather poor in flesh. The heart was normal in all aspects, and the lungs gave no adventitious sounds. The abdomen and the extremities were negative, and the reflexes were normal. Other findings were: temperature, 97.4 F.; pulse, 85; blood pressure, 85 systolic and 60 diastolic.

Laboratory Findings.—The urine and the blood Wassermann reaction were negative. The basal metabolic rate was undetermined.

Therapy.—The boy was given 2 grains of desiccated thyroid glands, 2 grains of desiccated suprarenal glands, and Blaud's mass in 5 grain capsules, three times a day. This was continued over one week without any appreciable change in the patient's condition. The dosage was increased as follows: the thyroid, to 3 grains; the suprarenal, to 3 grains; Blaud's mass remaining the same. At the termination of a fortnight, there was a distinct change in the patient's facies, the ruddy glow and expression of boyhood now being present. There was also a distinct change in his general mental attitude. He had gained 3 pounds in weight, and his pulse was now 88. At present, the boy is more active physically than ever before, taking part in all the games played by his companions at school. He goes to school unaccompanied. He has lost his lethargy, and his initiative has developed to a point of aggressiveness. His height is now 3 feet, 10 inches, his weight, 43 pounds.

The dosage used in this case, although not in keeping with the accepted standards used in endocrine therapy, caused no preceptible reaction in the patient at any time during the treatment. He proved himself extremely deficient in both thyroid and epinephrin secretions.

A MODIFICATION OF VASOSTOMY PERMITTING FREQUENT IRRIGATIONS OF THE VESICLES

E. F. HESS, M.D., CHICAGO

The fact that untoward effects frequently accompany vasostomy should make a suggestion to remedy this phase of the operation desirable. In recent operations on the service of Dr. L. E. Schmidt I have resorted to a simple means to obviate the many large infiltrations of the surrounding structure of the vasostomy wound, as well as the so-called "backfire epididymitis," not at all uncommon in cases in which the ordinary technic of vasostomy was carried out.

The operation itself, following the technic outlined by the originator, Dr. Belfield, is simple and may be carried out without assistance, if necessary. The cord is carefully isolated and firmly held between the index finger and thumb of the left hand. A ¼ to ½ inch incision is made down to the vas deferens. The latter is picked up and further isolated by passing a large kidney needle under it. A small puncture is made through it, exposing the lumen. A silkworm-gut strand is then passed in the usual way to ascertain patency of the lumen, and after withdrawing the silkworm gut, a 4 or 5 inch piece of ureteral catheter, No. 4, is introduced, and through it from 15 to 20 c.c. of 10 per cent. collargol injected. The same silkworm-gut suture which is used to close the skin wound can also be utilized to tie in place and more firmly fix the piece of catheter, although this is not essential, as a rule, as the catheter fits snugly into the average lumen of the vas and will remain in place indefinitely. The usual surgical gauze dressing is applied and the patient returned to bed after both sides have been thus treated.

The advantage of the procedure has proved itself, and the points gained are:

1. The operation remains as simple as before, and does not require a longer time or special instruments, excepting a short piece of No. 4 ureteral catheter.
2. Any collargol propelled or leaking backward does not drain into the wound but outside, and is collected into a gauze dressing, the wound being tightly closed excepting for the point of exit of the catheter. This does away with infiltration of the wound and epididymitis following regurgitation of collargol or other medicaments.
3. The piece of catheter may remain in place indefinitely, and reinjection may be performed on successive days through the catheter without the slightest difficulty, pain or inconvenience.
4. In chronic seminal vesiculitis, in which one is dealing with a viscus which is thickened, hardened and the interior of which is more or less covered or filled by plastic exudate, pus, débris or inspissated material, it is of undoubted value to irrigate frequently such a viscus or cavity with any solvent solution, such as physiologic sodium chlorid solution or weak sodium bicarbonate. This can be done two or three times a day and repeated over as long a period as desired and combined with massage of the distended vesicle. The benefit obtained and the character of material expressed, dissolved and washed out can be readily observed by the usual examination of voided urine after the procedure.

5 South Wabash Avenue.

Special Article

SEVEN YEARS OF NATIONAL HEALTH INSURANCE IN ENGLAND

A RETROSPECT

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LONDON, ENGLAND

(Continued from page 1312)

RANGE OF SERVICE

The agreement of the doctor is to give such service "as can properly be undertaken by general practitioners of ordinary competence and skill." This restriction has given rise to much criticism, most of it based on ignorance of the history of the service. When Mr. Lloyd George introduced his bill, the British Medical Association pointed out to him that the service he was offering was incomplete: that without the services of specialists and consultants many of the insured persons would be getting no more than they could get for themselves without the new service; that the doctor would often be unable to do his duty fully by the patient in the absence of a second opinion and the services of specialists; that without institutional facilities the service was badly handicapped, as the insured persons would still in the future as in the past have to depend mainly on charity, and that no provision whatever was made for the dependents, who were just as unable as the insured persons to provide domiciliary attendance for themselves. Mr. Lloyd George admitted all this and said he would be delighted to make the service a complete one, but that the country could not or would not afford it; that he wanted to make a beginning with the thing that he believed was the basis of any such service, namely, domiciliary attendance; that the rest could be added in the future, and that the experience gained by the present service would be of great value in deciding when and how best to expand it. The British National Health Insurance system is open to many criticisms, some of which, from the doctor's point of view, I shall mention; but it is not fair to blame it for not being what it never pretended to be. It gave some of the insured persons a service they had been providing for themselves privately; it gave a large number a service they had never been able to get before except partially and occasionally through charity; it gave a much larger number a service similar to, though better than, what they had been getting on a contract basis. But it did not pretend to give any of these classes a complete medical service.

From the beginning of the Act, the medical profession has never ceased to ask for the addition of the things that are lacking and in 1914, just before the war, the government voted money to set up a service of official Medical Referees (to settle disputed cases of ability to work), and to provide (*a*) second medical or surgical opinions; (*b*) a nursing service, and (*c*) laboratory facilities. The war stopped these extensions, but we have now (end of 1920) the official Referees, who will be able to command a second opinion when they think fit. Other extensions are under consideration at the Ministry of Health, but their provision seems likely to be retarded by the inability of the country to find money for anything that can be postponed—an inability shared, I believe, by every other lately belligerent country except the United States.

CONTROL OF THE SERVICE

General.—The Ministry of Health makes the Regulations which (subject to the provisions of the various National Insurance Acts) govern the service and are in operation in the area of every Insurance Committee. These Regulations are of the greatest importance, both to the insured person and to the insurance practitioner. They lay down, *inter alia,* the way in which the insured person may choose his doctor (any doctor on the list); the times at which he can change (twice a year without the consent of the doctor, any time with it); the hours at which the doctor can be seen (this is subject to local agreement and varies considerably from area to area and even from doctor to doctor); the method by which the patient gets his medicines (from the chemist if one is reasonably available, from the doctor if there is no chemist, as in many rural areas); the way in which and the times at which the doctor is paid (usually quarterly); the rules by which the patient is bound in his relations with the doctor, the way in which he can lay a complaint against his doctor, or the doctor against him; the way in which an Insurance Committee can proceed to get a doctor removed from the list if they think such a course necessary, etc.

Central.—The mere existence of regulations has been for the medical profession a new and most trying experience. I suppose the thing which most appeals to a man entering our profession is the individualism of it—the free relationship between himself and his patient; the fact that if either is not satisfied, he can go his way without any ceremony. But a contract, and especially a contract in which a third and even a fourth party (in this case the employer and the government) are finding part of the money, in addition to the patient, necessitates rules and regulations. "The price of freedom (even comparative freedom) is eternal vigilance," and the formulation of these regulations and the constant changes that have taken place in them as the result of experience have needed the exercise of the strongest vigilance and determination on the part of our Association.

ITS EFFECT ON THE INFLUENCE OF THE BRITISH MEDICAL ASSOCIATION

The introduction of the Insurance system has more than doubled the work and responsibilities of the British Medical Association. It is only fair to say that since we forced ourselves on the attention of the government at the introduction of the first bill, they have never, with one small exception (not worth mentioning except to show that without constant vigilance there would have been more instances), denied the right of our organization to be consulted in the framing or alteration of regulations. It is one of the normal duties of the Insurance Acts Committee of our Association to meet the representatives of the Ministry round a table for this purpose. In the extensive revision of regulations which followed the Armistice, we met thus in conference no less than twenty-three times. When we had roughed out the main lines on which the changes were to be founded, we circularized every insurance practitioner in the country, telling him the result of our labors. Then we had a Conference of representatives which discussed the proposals thoroughly. Then we went back to the Ministry, had more discussions, and finally the Ministry embodied the changes in actual draft regulations which we put up to another Conference. Now I do not say that the ultimate result was that we got *all* we asked for, or secured the elimination of *all* we objected to, or

the agreement of *all* our constituents. It did not. But I am prepared to say that we succeeded in getting inserted in the new Regulations a good deal of what we wanted, and eliminated many things to which we objected, and that the Regulations as they finally emerged were a very creditable production of collective bargaining, that is, of that process of give and take which is the normal way of doing business between bodies meeting as equals.

And when I say "meeting as equals," I mean it. It is true that a government department holds a very strong position. It has all the force of the government behind it and it holds the purse. But the medical profession also holds a very strong position. Without it, no service can be provided and the government is *bound* to provide a service. Even if the profession is not strong or united enough to refuse service, the heads of a government department know that a dissatisfied service is a bad service, and that a bad service has a knack of proving very awkward for the politicians and is just as awkward for the people who serve the politicians. Moreover, civil servants are reasonable persons who have a pride in the success of their department. A dissatisfied service means constant friction and more work for them. Therefore, they are prepared to go a long way to meet the responsible negotiators for the profession, who are, presumably, also reasonable persons, as equals. I make these remarks not because the American profession is necessarily directly interested in the subject, but in order to encourage those who may be pessimistic about the capacity of the profession to hold its own with state departments. The constant struggle to hold our own with politicians and government departments has in ten years made our Association into a much more alert, active and powerful body than we could have become in several generations of more peaceful existence.

Local.—The Regulations are administered locally by the Insurance Committee, which is composed, taking one of the larger bodies say of a County, of sixty persons. Twelve of these are elected by the County Council, of whom two must be doctors; thirty-six are representatives of the insured persons; ten are nominated by the Ministry of Health, of whom at least one must be a doctor, and two are nominated by the Panel Committee, both being doctors. Thus, out of sixty members there must be at least five doctors and there may be one or two more.

The Insurance Committees vary considerably in weight and capacity. The weak spot is the insured persons' representatives, who are generally officials of the Approved Societies, and whose method of election is frequently by no means ideal from the representative point of view, owing to great differences in the constitution of the Approved Societies into which I need not enter. The Insurance Committees are not bodies whose composition could be recommended to other countries proposing to set up similar bodies. Nobody in this country believes them to be a permanent institution; but they have done much good work under great difficulties, and we have no reason to be ashamed of them.

The Insurance Committee distributes the money (sent to them by the Ministry of Health from the Central Fund) to the doctors in accordance with the numbers of persons on their lists. It is responsible for the adequacy of the local service both of doctors and of chemists. It is responsible for the administration of sanatorium benefit for tuberculous persons, though often sharing this with the County Council or County Borough Council, to whose hands it will shortly go altogether. It has nothing to do with the administration of sickness or maternity benefits, money payments which are the province of the Approved Societies.

Each Insurance Committee must have a Medical Services Subcommittee composed of an equal number of representatives of doctors and of insured persons, with a Chairman who must be a member of the Insurance Committee but must not be either a doctor or an insured person's representative. To this subcommittee are automatically referred all complaints by patients against doctors and by doctors against patients. The report of the Subcommittee must go to the full Committee, but it is very rarely that the report is not accepted, frequently without discussion. It is surprising how little these Subcommittees have had to do. I believe it is a fact that even after seven years there are one or two of them which have never had a case before them, and in most areas the great majority of the complaints have been trivial. One reason for this is that the Chairman of the Subcommittee and the Clerk of the Insurance Committee, if reasonable and tactful persons, as they generally are, can usually settle cases "out of court." It is a fact, not foreseen by many of us in the earlier days, when we viewed the setting up of these bodies with great suspicion, that the medical members of the Subcommittee are notoriously much harder on medical delinquents than the lay members are. The penalties on the doctor are prescribed by the Insurance Committee on the recommendation of the Medical Services Sub-committee, and they may vary from censure to the recommendation to the Minister of Health that a part of his capitation grant be withheld as a punishment, or that he be removed from the list. The doctor has the right of appeal to the Minister. In any case of suggested removal from the list the case must be heard by an independent lawyer and two non-official doctors appointed as a court by the Minister. They report their findings to the Minister, whose decision is final. There is a fairly strong section of the profession which is very anxious that there should be a right of appeal from the Minister to a Court of Law; but up to the present the Government has always resisted this claim. One reason which has prevented many doctors from pressing this claim very strongly is the fact that such a right of appeal would of course have to be extended also to insured persons who were not satisfied, and the prospect of litigation of this kind is not very attractive. The number of doctors actually struck off the list is very small, and there has been no case in which the penalty has not been felt by all who knew the circumstances to be deserved.

The original 1911 Act recognized a Local Medical Committee in every Insurance area where the profession cared to elect one. The only condition laid down about its composition was that the Insurance Commissioners should be satisfied that it was representative of the qualified medical practitioners of the area, after passing which test it must be consulted by the Insurance Committee on all general questions affecting the administration of medical benefit, and the arrangements made with the medical practitioners.

In some areas the doctors did not elect local medical committees; and as some such committee was essential, the act of 1913 provided that this local consultation must take place through a Committee (called the Panel Committee) appointed by practitioners who are actually doing insurance work and elected in accordance with regulations made by the Insurance Commissioners.

Both the Local Medical Committee provided under the 1911 Act and the Panel Committee set up under the 1913 Act are in existence still; but in every area the personnel is the same, and for all the practical purposes of these remarks it may be taken that the Panel Committee is the body which directly represents the interests of the insurance practitioners in every area.

One of the striking features of our system is the rapid growth of the responsibilities demanded by and given to these bodies. These committees were one of the earliest, as they are one of the most outstanding examples, of the application of the modern idea of "giving the worker a share in the government of the industry in which he is employed."

There is a considerable amount of elasticity as to the methods by which the Panel Committee is elected. The only rôle of the Ministry of Health (vice the Insurance Commissioners) is to satisfy itself that, when elected, the Panel Committee may be taken as representative of the insurance practitioners in the area. It may be elected by postal vote or by meetings, and up to the present all Committees have been elected annually. I am sorry to say that doctors, like every other class in this country, are slack about electing their representatives, and there are few areas in which any enthusiasm is shown in the elections. There are, I am thankful to say, signs of more activity both in general and in medical politics. The war has not exhausted all our fighting spirit.

DUTIES OF THE LOCAL MEDICAL AND PANEL COMMITTEE

It must be consulted by the Insurance Committee, *inter alia*:

(*a*) In the preparation of the local terms of service: The Insurance Committee in submitting the proposed local agreement to the Ministry for its approval must transmit any observations made by the Panel Committee; (but the *general* terms of service are settled centrally by negotiation between the Insurance Acts Committee of the British Medical Association and the Ministry of Health. The local negotiations are on local and comparitively small variations).

(*b*) On the methods of distribution of the money allocated to the area from the Central Pool, and also the money allotted from the Central Mileage Fund.

(*c*) On the rules governing the procedure of the Medical Services Subcommittee (for the purpose of hearing complaints).

(*d*) The Local Medical Committee (representing the opinion of the profession as a whole, whereas, the Panel Committee represents more particularly the doctors actually in the service—in practice the difference is negligible) must have referred to it any question which arises as to whether any given service comes within the scope of the agreement; that is, whether or no it can be said to be a service which, "consistently with the best interests of the patient, could properly be undertaken by a general practitioner of ordinary professional competence and skill." The opinion of the Local Medical Committee is usually accepted by the Insurance Committee; but when it is not, the question is referred to a court of Referees appointed by the Minister (a lawyer and two doctors appointed *ad hoc* for that case), whose decision is final. The Ministry may refer the point to Referees, even though the Local Medical Committee and the Insurance Committee are in agreement; but this is very rarely done.

(*e*) The Local Medical Committee must have referred to it any complaint made to the Insurance Committee by one insurance practitioner against another involving any question of the efficiency of the medical service, and the Local Medical Committee may make representations (and sometimes has done so) to the Minister that the continuance on the medical list of a practitioner against whom complaint is made will be prejudicial to the efficiency of the service.

(*f*) The Panel Committee must be consulted by the Insurance Committee in the preparation of the local rules regulating the administration of medical benefit, including those governing the behavior of patients under treatment.

There are many other points in connection with the service about which the Panel Committee must be consulted, and it may be said that these Committees, when energetic and vigilant, as they often are, can and do exercise a great influence over the Insurance Committees in all the details of medical administration.

It is the duty of the Panel Committee to investigate all complaints as to alleged excessive prescribing. This is a matter which has given rise to a good deal of discussion and misunderstanding, so it must be explained at some length. When the remuneration for the service was fixed at 9s. a head, 7s. of this was definitely allocated to the doctor for medical attendance, 1s. 6d. a head to form a pool out of which the chemists were to be paid for providing and dispensing the medicines and appliances, and 6d. was kept in suspense. The 6d. was known as the "floating sixpence," and was a most ingenious device for the protection of the Drug Fund. The government believed that 1s. 6d. or thereabouts was sufficient for the drugs and appliances, and it was not prepared to pay more than 2s. If the expenses of drugs came to more than 2s. a head in any area, then the bills of the chemists were to be discounted down to the 2s. limit. But the government recognized that much discounting would lead to discontent among the chemists, as indeed it did, and they sought to enlist the services of the doctors in keeping down unnecessary prescribing and the consequent undue cost of drugs. They therefore promised the doctors that if they kept down the prescribing in their area to a sum between 1s. 6d. and 2s., the doctors among them would share that part of the "floating sixpence" which remained. The 1s. 6d. went to the Drug Fund anyhow, so that there was no inducement to the doctor to reduce his prescribing below that limit; but he was made a partner in the attempt to keep the cost under 2s. In very many areas the doctors got the 6d. or part of it, and only in comparatively few were the chemists' bills discounted. But the scheme, though ingenious, was objectionable. It gave rise to the suspicion that the patients were being deprived of drugs they ought to have, in order that the doctor might get the 6d. The chemists did not like it, nor did the doctors, because although it benefited them financially it exposed them to injurious suspicions. The system has been abolished—except in Scotland, where in a modified form it still remains for the present, though not, I believe, for long. The Treasury now takes full responsibility for the payment of the chemists' bills, and there is no "floating 6d."; but the Panel Committees continue to fulfil the function imposed on them under the old system. They still have the responsibility of protecting the Drug Fund against extravagant prescribing. They have provided for them by the Insurance Committees abstracts of the claims on the local Drug Fund, and it is their duty on observing what they think to be extravagant claims to investigate them. This necessitates the examination of selected prescription forms and the interviewing of the doctors who *prima facie* seem to be ordering drugs either in excessive quantity, or of a quality or kind which seems unnecessary. There is no gainsaying the fact that this duty is not a popular one with the Panel Committees—duties are seldom popular. But the inquiries are carried out by people who *know:* doctors elected by the insurance practitioners of the area, men who are doing

the same work themselves—men who know what a fair average is and who are actuated by a desire for the welfare of the service in which all concerned are employed. The accused is "tried by his peers." A doctor who can show just cause for an apparently extravagant prescription or series of prescriptions need fear nothing. The doctor who, from sheer carelessness or want of experience in prescribing, orders fancy preparations or unnecessarily large quantities will be given good advice in the first place, but if he persists will be docked (by the Insurance Committee on the advice of the Panel Committee) of the difference between what his prescriptions have cost and what the Panel Committee estimates the necessary drugs, etc., would have cost. The practitioner has a right of appeal to the Ministry. It is on the administrative machinery that I have just described that the opponents of the system have founded their complaints that the insurance practitioner is not allowed to prescribe what he thinks is best for his patients: that if he prescribes for them just as he would for a private patient he will find himself hauled before the Panel Committee and fined. I do not believe that any Panel Committee ever has or ever will penalize a doctor for prescribing any medicines, however expensive, that the doctors composing that Committee think to be necessary after full consideration and debate with the prescriber (if he cares to be present, as he always has the chance of being). I am bound to say that the reports I have seen of some of these inquiries by Panel Committees show a recklessness on the part of a small number of doctors which is rightly regarded and punished as a waste of public money. The steady and regular investigation by the Panel Committee of the prescribing in each Insurance area is having the effect of teaching that simplicity in prescribing is not incompatible with effective treatment. I do not believe the procedure has deprived or will deprive a single insured person of any drugs really necessary for his treatment. But the system evidently does not favor "elegant pharmacy" or luxury in prescribing.

Other duties have recently been placed on the medical profession, which are exercised through an Allocation Subcommittee, composed of equal numbers of persons appointed by the Insurance Committee and by the Panel Committee. The duties of this body are to see that all insured persons get the medical benefit to which they are entitled, if necessary by allocating them to one of the doctors on the list. There are many insured persons who, in spite of repeated reminders, will not choose a doctor. This Subcommittee may, after due notice, proceed to allocate them to some doctor or doctors (this power has not yet been exercised). Sometimes a doctor or doctors will decline to accept a certain person for reasons which seem good to them, and the Allocation Subcommittee may have to allocate him to another, or even to one of those who has refused. But this is very rare. Allocation is not often required except for strangers who have come to the district and find some difficulty in getting accepted. This kind of allocation, however, is generally done, not by a meeting of the Subcommittee but by the operation of a previously arranged scheme, or by arrangements made by the Clerk of the Insurance Committee with some conveniently situated doctor. The chief duty of the Subcommittee (which only came into existence in 1920) is to allocate those persons who have been on the list of a retired or deceased doctor, and who, after due notice, do not choose a doctor for themselves. When a doctor dies or gives up practice his patients are notified by the Insurance Committee and given three months in which to select a new doctor. At the end of the three months those who have not chosen are told that unless they choose they will at the end of another month have a doctor chosen for them. During this four months the successor of the retiring or deceased doctor can be getting introduced to the practice; and though there has been little experience yet, it is almost certain that those patients of the old practice who have not selected a doctor at the end of the four months will almost invariably be allotted to the successor of the Allocation Committee. It will be the line of least resistance and will naturally be favored by the medical members of the Committee who will themselves die or retire some day.

(To be continued)

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

EPINEPHRIN (See New and Nonofficial Remedies, 1921, p. 107).

Suprarenalin.—A brand of epinephrin N. N. R.

Marketed only in the form of suprarenalin solution.

Manufactured by Armour & Company, Chicago, U. S. patent No. 829,220 (Aug. 21, 1906; expires 1923). No U. S. trademark.

Suprarenalin Solution. — 1000 parts contain suprarenalin sulphite equivalent to 1 part of suprarenalin in physiological solution of sodium chloride without addition of other preservatives.

Benzyl Benzoate.—H. W. & D. (See New and Nonofficial Remedies, 1921, p. 61).

The following dosage form has been accepted:

Sterile Ampules of Benzyl Benzoate-H. W. & D., 0.5 c.c.—One c.c. contains Benzyl Benzoate-H. W. & D. 0.5 c.c. diluted with olive oil. Each ampule contains more than 1 c.c.

SILVER ARSPHENAMINE.—See THE JOURNAL, May 7, 1921, p. 1312.

Silver Diarsenol.—A brand of silver arsphenamine, N. N. R.

Manufactured by the Synthetic Drug Co., Toronto, Canada, and Synthetic Drugs, Ltd., Buffalo, N. Y. (Diarsenol Company, Inc., Buffalo, N. Y.) under U. S. patent Nos. 1,091,881 (March 31, 1914; expires 1931) and 1,127,603 (Feb. 9, 1915; expires 1932) under license from The Chemical Foundation, Incorporated. Licensed for interstate sale by the U. S. Treasury Department under the "act to regulate the sale of viruses, serums, toxins and analogous products."

Silver Diarsenol, 0.05 Gm. Ampoules. — Each hermetically sealed ampule contains silver diarsenol 0.05 Gm.

Silver Diarsenol, 0.1 Gm. Ampoules. — Each hermetically sealed ampule contains silver diarsenol 0.1 Gm.

Silver Diarsenol, 0.15 Gm. Ampoules. — Each hermetically sealed ampule contains silver diarsenol 0.15 Gm.

Silver Diarsenol, 0.2 Gm. Ampoules. — Each hermetically sealed ampule contains silver diarsenol 0.2 Gm.

Silver Diarsenol, 0.25 Gm. Ampoules. — Each hermetically sealed ampule contains silver diarsenol 0.25 Gm.

Death Rate Among Industrial Workers Declines.—The Metropolitan Life Insurance Company has recently published statistics for 1920, based on the records of 16,000,000 persons holding insurance policies in the United States and Canada, which are considered fairly representative of the general population. The industrial department of the Metropolitan Life Insurance Company shows a death rate of 9.7 per thousand, which is 9 per cent. less than the 1919 rate, and 23 per cent. less than the mortality record of 1911. Tuberculosis, pneumonia, influenza and accidents show a marked decrease. The improvement as regards tuberculosis is most marked. In 1920 this disease was responsible for 13.9 per cent. of the deaths, a death rate 14 per cent. less than in 1919, and 40 per cent. less than in 1911. The influenza and pneumonia death rate was 27 per cent. lower in 1920 than in 1919.

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SATURDAY, MAY 14, 1921

DOES LACTOSURIA OCCUR IN INFANCY?

It has long been known that the urines of infants suffering from a variety of nutritional disorders, including the type of disease which has latterly been described as toxicosis, may contain reducing substances in abnormally large amounts. In the earlier days it sufficed to describe the condition with respect to the eliminated carbohydrate as one of alimentary glycosuria. Subsequently, however, trained observers asserted that the excreted sugar frequently is lactose rather than the more usual glucose; and even galactose, a cleavage product of lactose, has been reported to occur in the urine of infants in cases of gastro-enteric disturbance.

The picture of such a condition has been presented by Langstein and Meyer [1] somewhat as follows: Sugar appears in the urine long before the limit of assimilability for the carbohydrate in question has been reached. This circumstance evidently is alimentary in origin, for it ceases with the exclusion of the specific sugar from the diet. When the latter contains lactose, the urine is likely to exhibit lactose or its derivative galactose, though glucose is not so readily lost by elimination. The German pediatricians have argued that such lactosuria is due to the absorption of undigested lactose, it being well known that this sugar, like other disaccharids, must be inverted into its component six-carbon sugar groups before it can be burned up or properly utilized in the organism. Why lactose should fail of this essential digestion is not clear; for there is no evidence of a lack of the requisite digestive enzyme, lactase, in the intestine of infants. The appearance of galactose in the urine, however, can only be interpreted as an indication of a diminished metabolic capacity of the organism, leading to the elimination of a simple sugar that would be burned up or deposited in the normal course of nutrition.

If this widely quoted interpretation of the significance of the mellituria of infants suffering from some sort of toxicosis were tenable, the problem of a suitable choice of carbohydrate would at once come to the front. Lactose would be severely condemned at the outset. Schloss,[2] however, has recently furnished a serious critique of the current claims, by his study of the nature of the reducing substances in the urine of infants with gastro-enteric disorders. From this it appears that the greater amount of the reducing substance so frequently noted is fermentable and cannot be lactose; furthermore, the carefully reviewed new chemical evidence speaks against the presence of galactose in these cases. If the substance were lactose or galactose, it should be present in the urine only when lactose is ingested. But Schloss has found that this is by no means the case. Infants suffering from intestinal intoxication may eliminate urine with marked reducing action even in the absence of all milk products in the diet.

The conclusion seems warranted at present that in the majority, at least, of these cases of toxicosis in children the carbohydrate in the urine represents what Benedict has lately designated as glycuresis—an increased elimination of glucose.[3] Schloss does not deny that alimentary lactosuria may occur, but implies that it is at most a clinical rarity in comparison with the frequently observed exaggerated excretion of glucose. This condition is attended with distinct hyperglycemia so that it can scarcely be merely of renal origin. Schloss inclines to the hypothesis of a disturbed sugar metabolism. Perhaps the phenomena are also concerned with another factor, anhydremia, which has lately been emphasized as a significant pathogenic feature in infancy.[4]

1. Langstein, L., and Meyer, L. F.: Säuglingsernährung und Säuglingsstoffwechsel, Wiesbaden, 1910.

THE STORAGE OF VITAMINS IN THE BODY

Two facts of preeminent importance have been established by investigations in nutrition. One is that those peculiar and physiologically potent properties of foods designated as vitamins are essential to the well-being of the human organism. The other equally significant, though perhaps less thoroughly appreciated, fact is that apparently these vitamins are not synthesized or manufactured in the human tissues, but the body depends on an extraneous supply which in ultimate analysis seems to be derived from plant sources. Recently some attention was devoted in THE JOURNAL [5] to the evidence for the interrelations between the vitamin potency of feeds and the antiscorbutic property of the milk secreted by animals which eat them. It seems at present to be well established that the mammary secretion reflects, so to speak, the richness of the diet of the lactating animal in antiscorbutic vitamin.

Something of a comparable sort seems now to be clearly demonstrated for the distribution of the fat-

2. Schloss, O. M.: The Nature of the Reducing Substance in the Urine of Infants with Nutritional Disorders, Am. J. Dis. Child. **21**: 211 (March) 1921.

3. Urine Sugar in Infancy, editorial, J. A. M. A. **76**: 867 (March 26) 1921.

4. Diarrhea and Anhydremia in Infancy, editorial, J. A. M. A. **76**: 794 (March 19) 1921.

5. Variations in the Antiscorbutic Potency of Milk, editorial, J. A. M. A. **76**: 1105 (April 16) 1921.

soluble vitamin A. It has been recognized, since the pioneer researches of McCollum and Davis [6] and of Osborne and Mendel [7] in this field in 1913, that the otherwise wholesome pig fat lard is ordinarily exceedingly poor in vitamin A in comparison with the fat of cow's milk (butter fat), egg fat, or even the abdominal fat of cattle which enters into so-called oleo oils. Now and then, however, there have been reports of instances in which the pig fat seemed to respond better to the tests for the vitamin A. The recent discussions regarding the possible identity of the latter with the antirachitic potency of certain foods like cod liver oil, which is singularly rich in this vitamin, have awakened much interest in the entire subject.

Recent investigations of a group of English workers [8] seem destined to bring greater clarity and explain the seemingly singular deficiency which lard has been found to exhibit so commonly. It appears from their animal tests that the pig is able to store up supplies of vitamin A in the body fat when fed on a diet containing ample supplies of that factor, as, for example, when grass-fed; but when the diet of the pig is deficient in vitamin A, no appreciable amount of that dietary factor can be detected in the body fat.

It happens, presumably, that the diet usually given to fattening pigs in this country is seldom rich in vitamin A, so that the average sample of pig fat contains little or none of that substance. Furthermore, another factor tending toward the destruction of vitamin A which actually may be present in pig fat is apparently effective in much of the commercial manufacture of lard. Various investigators, notably Hopkins,[9] and Drummond and Coward,[10] have indicated that although the vitamin A present in butter, for example, is not highly sensitive to heat in the absence of air, destruction takes place readily on heating in the presence of air. It is probable, therefore that the loss is due to changes of an oxidative nature. The process of commercial lard manufacture undoubtedly causes the destruction of much of the vitamin present in the original pig fat, probably owing to the exposure of the fat to oxygen at high temperature. For us the lessons of importance are not so much to be sought in the higher or lower content of vitamin A in any particular fat like lard or its analogues, but rather in the physiologic lesson that the character of the diet can undoubtedly influence the store of all types of known vitamins in the body. This conclusion may be of pronounced significance for the nursing mother in determining a beneficial or baneful effect on her milk through her diet.

6. McCollum, E. V., and Davis, M.: The Necessity of Certain Lipins in the Diet During Growth, J. Biol. Chem. **15**: 167, 1913.
7. Osborne, T. B., and Mendel, L. B.: The Relation of Growth to the Chemical Constituents of the Diet, J. Biol. Chem. **15**: 311, 1913.
8. Drummond, J. C.; Golding, J.; Zilva, S. S., and Coward, K. H.: The Nutritive Value of Lard, Biochem. J. **14**: 742 (Dec.) 1920.
9. Hopkins, F. G.: The Effects of Heat and Aeration upon the Fat-Soluble Vitamine, Biochem. J. **14**: 725 (Dec.) 1920.
10. Drummond, J. C., and Coward, K. H.: Researches on the Fat-Soluble Accessory Factor (Vitamin A), VI, Effect of Heat and Oxygen on the Nutritive Value of Butter, Biochem. J. **14**: 734 (Dec.) 1920.

OPHTHALMIA AND DIET

The articles on the relation of experimental ophthalmia in animals to diet which appeared recently in THE JOURNAL [1] direct attention to possible new interpretations of human eye disorders which have heretofore been baffling. Following the advent of modern bacteriology, many types of ophthalmia were ascribed primarily to infection, and the therapy applied was bactericidal. Local applications of antiseptic lotions have long held a prominent place in ophthalmologic practice.

The assumption of a relationship between nutritive disturbances and ophthalmia is by no means new, as the articles referred to point out. But Osborne and Mendel were the first to indicate how the crux of the problem may be concerned with the absence of the food factor now known as the fat-soluble vitamin A. It has already been shown in the case of several species that when vitamin A is missing for some time from the dietary an ophthalmia, which has been variously designated as xerophthalmia and keratomalacia, may be one of the manifestations of ill health that come into prominence in the animals living on the deficient rations. Mere inanition will not account for the train of symptoms; nor is the ophthalmia to be regarded as a chance infection pervading the habitat of laboratory animals from time to time. Several investigators corroborate the report of Osborne and Mendel that in observations on several thousands of rats they have never observed distinct symptoms of comparable eye disease in any animals except those which had experienced a deficiency of fat-soluble vitamin in their diet. Furthermore, it is the administration of some source of vitamin A, such as milk fat, cod liver oil or green leaves, rather than antiseptic lotions, that ordinarily effects a prompt cure if the disorder has not damaged the eye structures too greatly.

From her study of the pathology of this ophthalmia which involves bacterial invasion of the cornea, Wason [1] admits that the nature and mechanism of the changes whereby the corneas are rendered susceptible remains to be ascertained. The bacteria, though always present on the surfaces involved, are not the primary etiologic factor; they are secondary invaders. According to Wason, the type and virulence of the organisms of secondary infection determine, in part at least, the course of the disease. The anatomic manifestations of the disease are characterized by hyalinization or necrosis of the outer layer of corneal epithelium, exudation of serum and cells into epithelium and stroma, and a proliferation of blood vessels and fibroblasts. In advanced cases invasion of the anterior, and occasionally of the posterior chamber, results. The degree to which restoration is possible depends on the extent of the secondary injury.

1. Osborne, T. B., and Mendel, L. B.: Ophthalmia and Diet, J. A. M. A. **76**: 905 (April 2) 1921. Wason, Isabel M.: Ophthalmia Associated with a Dietary Deficiency in Fat Soluble Vitamin (A), J. A. M. A. **76**: 908 (April 2) 1921.

To what extent, if at all, these possibilities apply to human practice can scarcely be foretold. There are reports in the literature which deserve study from the new point of view.[2] It has been recorded that Wells of Chicago found in Roumanian children who were subsisting on a diet largely made up of corn meal and thin bran-vegetable soup, neither of which was a source of vitamin A, an eye disease that promptly disappeared when cod liver oil was administered.[3] Perhaps the prominence that has been given to the experimental aspects of the subject in THE JOURNAL and elsewhere will serve to bring new and decisive facts to light respecting the possible relations of ophthalmia to diet in man.

Current Comment

ASPIRIN OR ACETYLSALICYLIC ACID—AN IMPORTANT COURT DECISION

For many years the Council on Pharmacy and Chemistry, and THE JOURNAL, have been urging physicians to avoid using proprietary trade-marked names when prescribing drugs or chemicals obtainable under nonproprietary names. Two chemicals have been especially referred to in this connection: hexamethylenamin and acetylsalicylic acid. Many years ago, hexamethylenamin was found to be an effective therapeutic agent, especially as a urinary antiseptic. Since it was a well known chemical, it could not be patented. A commercial firm, however, seized the opportunity, coined the name "urotropin," and advertised it. As a result, "urotropin" became so impressed on the minds of physicians that many have been unable to eradicate the term from their minds, and still use it in prescribing this drug. Other firms coined other terms, such as "formin," "aminoform," "cystamine" and "hexamin," and advertised them widely; but "urotropin," being most extensively and persistently advertised, made the most lasting impression on the minds of physicians. And it is much harder to eradicate a first impression than to make a new one. As to acetylsalicylic acid: This drug was patented and the trade name "aspirin" coined for it by the predecessor of the Bayer Company. The seventeen years of exclusive monopoly and privileged advertising made an impression on the minds of physicians, and also on those of laymen who had become used to seeing the word "aspirin" in physicians' prescriptions. As a result, when the patent expired, although numerous preparations of this drug were made available under the true and descriptive name, acetylsalicylic acid, physicians continued to prescribe the drug under its coined name. The rights in this product were eventually acquired by the Sterling Products Company. This firm—under the name of "The Bayer Co."—has conducted a strong advertising campaign in the newspapers that leaves the impression on the lay mind that there is no satisfactory aspirin except aspirin "Bayer." Among the several manufacturers who came into the market with this drug on the expiration of the Bayer patent was the United Drug Company. The owners of the Bayer product brought suit against the United Drug Company to prohibit the selling of the latter's product under the name "aspirin." The United States District Court of Southern New York recently rendered a decision in this matter. This decision, which seems to be a compromise, is of importance to physicians. The ruling of the court notes that acetylsalicylic acid is known as such to manufacturing chemists, pharmaceutical houses, pharmacists and physicians, so that to them the word "aspirin" signifies only the product of Bayer origin, whereas the term "acetylsalicylic acid" is unknown to the average layman, though the term "aspirin" is. The pharmacist, therefore, according to the court's ruling, is justified in supplying a layman who asks for aspirin with acetylsalicylic acid tablets of any reputable maker. But the court rules—and this is the important point—that when a physician writes "aspirin" in a prescription, only the Bayer product can be supplied. Unless a physician wishes to cater to the concern owning the Bayer rights and to aid in perpetuating what was a monopoly for seventeen years, he should be careful to prescribe the drug under the term "acetylsalicylic acid." The court now places the responsibility directly on the medical profession. Avoid "aspirin"—write "acetylsalicylic acid."

THE AVOIDANCE OF ANAPHYLACTIC SHOCK FROM SUBCUTANEOUS INJECTION OF PROTEINS

The extreme rarity of serious anaphylactic shock in man, despite the frequent use of foreign protein injections even by the intravenous route, would seem to indicate either that the condition of hypersensitivity to such proteins as are thus used is uncommon, or else that man when sensitized is not usually capable of reacting in the same alarming way as the sensitized guinea-pig. Not a few immunologists are of the opinion that the latter is the proper explanation of the tolerance of the human subject, for it has been abundantly shown that different species of animals differ greatly in respect to the severity of their reaction to spaced injections of foreign proteins. Nevertheless, a few tragic cases have occurred in which patients have shown severe symptoms immediately after injections of serum, with manifestations altogether similar to those seen in sensitized guinea-pigs, so that sometimes, at least, the conditions in man must be the same as in these particularly susceptible animals. Elsewhere in this issue, Lewis [1] calls attention to the fact that in most of these cases the serious reactions have occurred following subcutaneous injections, and with symptoms appearing in a few minutes, despite the fact that, in the highly reactive guinea-pig, subcutaneous injections seldom produce death unless relatively enormous amounts of foreign serum are injected, and the symptoms usually come on slowly. He investigated the problem thus presented and found that only by adopting extreme

2. Bloch, C. E.: Ugesk. f. Læger 79: 309 (March 1) 1917. Chick, H.: Brit. M. J., July 31, 1920.
3. Harrow, B.: Vitamines, New York, 1921, p. 129.

1. Lewis, J. H.: The Route and Rate of Absorption of Subcutaneously Injected Serum in Relation to the Occurrence of Sudden Death After Injection of Antitoxic Horse Serum, this issue, p. 1342.

measures, such as vigorous massage or injection of great quantities under high pressures, could the foreign serum be forced directly from the site of injection through the lymphatics into the thoracic duct in sufficient amounts to produce prompt and serious anaphylactic reactions. These observations lead to the conclusion that serious anaphylactic shock in man after subcutaneous injection of foreign protein must usually depend on the accident of unintentional injection of a subcutaneous blood vessel in a subject hypersensitive to the foreign protein used. Possibly in some instances the blood is reached by way of the lymphatics rapidly enough to account for prompt anaphylactic shock when the injection is made under pressure, or the wheal is vigorously massaged. That subcutaneous injections occasionally do enter the blood vessels directly is shown by those cases in which fat embolism has resulted from subcutaneous injection of oils. These experimental studies indicate the great need for care when foreign proteins are injected that the point of the needle is not within a vein, especially in those cases in which there is reason to suspect that the patient is hypersensitive to the protein injected.

Association News

THE BOSTON SESSION

Identification Certificates

Members must provide themselves with Identification Certificates if they wish to purchase special rate roundtrip tickets to Boston. One Certificate will permit a member to purchase these railroad tickets for himself and for "dependent members of his family." Requests for these Identification Certificates should be made to the Secretary of the American Medical Association, 535 North Dearborn Street, Chicago, and should be accompanied by a self-addressed stamped envelop.

Be Sure to Take Your Pocket Card to Boston

In order to facilitate registering at the Boston session Fellows should take with them to Boston their pocket cards certifying to their being Fellows in good standing for 1921.

If you are going to Boston and have mislaid your pocket card, send for a duplicate.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

COLORADO

Invitation to A. M. A. to Meet in Denver.—At the regular meeting, the Denver County Medical Society voted in favor of extending an invitation to the American Medical Association to hold the 1922 meeting of the Association in Denver. The last session held in Denver was that of 1898.

State Medical School and Hospital Assured.—The Colorado legislature has appropriated $600,000 partially to meet an offer of the Rockefeller Foundation toward the building of a modern state medical school and hospital at Denver. The sponsors of the bill have assumed the responsibility of obtaining the further required amount. Credit is due the officers of the state university for their earnest work in securing the cooperation of the foundation and for so putting the proposition before the public and the legislature that its urgency was appreciated.

CONNECTICUT

Graduate Degree at Yale.—The graduate school of Yale University has been authorized to confer the degree of doctor of philosophy for work in clinical medicine, and in pharmacology and toxicology.

FLORIDA

Public Health Association Organized.—The recently formed Florida Public Health Association was the outgrowth of the state tuberculosis association. All papers and funds of the old organization were turned over to the new association, which was formally incorporated by the board of directors.

ILLINOIS

Meeting of Military Surgeons.—The Association of Military Surgeons of Illinois will meet at Springfield, May 16. The governor and adjutant-general are expected to address the assembly.

DeWitt County Medical Society Disapproves Prescriptions for Alcoholic Beverages.—At a recent meeting held in Clinton, the DeWitt County Medical Society went on record by adopting a resolution which declared that component society disapproved the writing of prescriptions for beer and wine under the new interpretation of the Volstead act.

Chicago

Chicago Laryngological and Otological Society Elects.—At the annual meeting of the Chicago Laryngological and Otological Society, May 2, the following officers were elected: president, Dr. Robert Sonnenschein; vice president, Dr. Edwin McGinnis; secretary-treasurer, Dr. John A. Cavanaugh; members of the council, Drs. Otto T. Freer and Albert H. Andrews.

MARYLAND

Personal.—Dr. Arthur H. Hawkins, Cumberland, was elected president of the Medical and Chirurgical Faculty of Maryland for the next year, at a meeting held, April 28, in Osler Hall, Baltimore.

MINNESOTA

No State Aid for Health Supervision in Schools.—After having passed the house, the provision for state aid for health supervision in the public schools was eliminated from the state aid amendment in the senate.

Clinic Week.—Under the auspices of the Hennepin County Medical Society, the fourth annual clinic week was held in Minneapolis, April 25-28, with sessions at eleven city hospitals in the mornings. At the afternoon sessions, addresses were made by Dr. Kellogg Speed, Rush Medical College, Chicago, on "Appendicitis in Children 14 Years or Under," and Dr. James B. Herrick, also of Rush Medical College, on "Pain in Heart Disease." Dr. Walter Timme, New York Neurological Institute, also delivered an address. The Hennepin County Medical Society gave a banquet for visiting physicians, on Wednesday evening, at which Dr. Herrick was the chief speaker. His subject was "Clinical Features in Metastatic Tumors."

MISSOURI

Members of State Board of Health.—Governor Hyde has appointed Dr. Rudolph S. Vitt of St. Louis and Dr. Franklin E. Murphy of Kansas City as members of the state board of health.

Referendum on Senate Bill 433.—Referendum petitions have been distributed to physicians and laymen throughout the state for the purpose of suspending the operation of the law passed by the last session of the legislature known as Senate Bill 433 which will have the effect of lowering the medical college standards. The Missouri Public Health League, an organization formed at the mass meeting held in St. Louis, April 26, has charge of the undertaking. The petitions must be completed and filed with the Secretary of State.

NEW JERSEY

Campaign of Jersey Medical Guilds.—For the purpose of organizing guilds in counties where there are none and to perfect organizations of those already in existence to bring together physicians, druggists, dentists and nurses, special meetings of county medical societies were held during the last two weeks of April. The organization is concerned principally with legislative matters which affect the four professions.

The organization work will be done by Dr. Joseph H. Gunn, executive secretary of the welfare committee of the state medical society.

Physiatric Institute.—The formal opening of the Physiatric Institute for the investigation and treatment of metabolic disorders was held in Morristown on April 26. About three hundred persons, chiefly physicians, were in attendance. Addresses were delivered by Dr. Elliott P. Joslin, Dr. Henry S. Pritchett, president of the Carnegie Foundation, Dr. David C. English, editor of the New Jersey State Medical Journal (read in his absence by Dr. M. A. Curry), and Dr. Frederick M. Allen, director of the Physiatric Institute. This institute has been in operation since last July, but the formal opening was deferred owing to incompleteness in some respects.

NEW MEXICO

New Medical Officers.—The officers elected at the meeting of the New Mexico Medical Society held, April 31, under the presidency of Dr. Charles A. Frank, Albuquerque, were: Dr. Chester Russell, Artesia, president; Dr. Harry A. Miller, Clovis, president-elect; Drs. George S. McLandress, Albuquerque, Thomas E. Pressley, Roswell, and Horace G. Willson, Gallup, vice presidents; Dr. Frank E. Tull, Albuquerque, secretary, and Dr. John W. Elder, Albuquerque, treasurer; delegate to the American Medical Association, Dr. Harry A. Miller, Clovis; alternate, Dr. William B. Cantrell, Gallup, and associate editor, *Southwestern Medicine*, Dr. William T. Joyner, Roswell. The 1922 meeting will be held in Gallup.

NEW YORK

New York City

Opposed to Health Centers.—The house of delegates of the Medical Society of the State of New York, at its meeting on May 2, adopted resolutions declaring the society "emphatically opposed to 'State Medicine,' and to any schemes for 'Health Centers,' 'Group Medicine' and 'Diagnostic Clinics' either wholly or partly controlled, operated or subsidized by the state or national government; and that the delegates from the society to the American Medical Association be instructed to present this resolution at the House of Delegates of the American Medical Association at its coming session in June and to use every possible means to secure its adoption." This resolution was introduced by Dr. Eden V. Delphey of New York.

State Society Meeting.—The state medical society held its one hundred and fifteenth annual meeting in Brooklyn, May 2-5, under the presidency of Dr. J. Richard Kevin. Health week, beginning with health sermons in the churches on Sunday, with a public health program throughout the week and a special health exhibition arranged by Brooklyn physicians, was a new feature. The annual oration was delivered by Dr. Llewellys F. Barker, Johns Hopkins University, Baltimore, and Governor Channing Cox of Massachusetts spoke at the banquet. Other speakers were Dr. George E. Vincent, director, Rockefeller Foundation, whose subject was "Medical Education," and Dr. George Walker, Baltimore, who spoke on "The Abolition of Venereal Disease." The following officers were elected for the ensuing year: president, Dr. James F. Rooney, Albany; vice presidents, Drs. William Meddaugh Dunning, New York, William H. Purdy, Mount Vernon, and William D. Johnston, Batavia; secretary, Dr. E. Livingston Hunt, New York; assistant secretary, Dr. Wilbur Ward, New York; treasurer, Dr. Seth M. Milliken, New York; assistant treasurer, Dr. Charles Gordon Heyd, New York.

NORTH CAROLINA

State Medical Meeting.—The sixty-eighth annual meeting of the Medical Society of North Carolina was held, April 26-28, at Pinehurst, under the presidency of Dr. Thomas E. Anderson, Statesville. Visiting physicians who took part in the program were Dr. Stanley P. Reimann, Lankenau Hospital, Philadelphia; Dr. Stuart McGuire, St. Luke's Hospital, Richmond, Va., and Dr. Frederick R. Green, American Medical Association, Chicago. In compliance with a state law, the state board of health held a joint session with the medical society, April 27, at which the policies of the health board were approved by the physicians who pledged themselves to make these policies even more successful in the coming year. The North Carolina Hospital Association also held its annual session in conjunction with the medical meeting. Dr. Hubert A. Royster, Raleigh, was elected president, and Dr. Lewis B. McBrayer, Sanatorium, secretary of the state medical society. Dr. Lawrence J. Smith, Wilson, was elected president, Dr. Alexander C. Bulla, Winston-Salem, vice president, and Dr. Frank M. Register, Raleigh, secretary of the state health officers association, and Dr. Watson S. Rankin, Raleigh, was reelected secretary of the state board of health and state health officers. A resolution offered by Dr. Isaac W. Faison, Charlotte, urging the manufacture and distribution of toxin-antitoxin for prevention of diphtheria was adopted, and Dr. Clarence A. Shore, Raleigh, director of the laboratory of hygiene, announced that preparations were under way and that it would soon be available. The meeting next year will be held at Winston-Salem.

OHIO

"Diamond Anniversary" of Medical Association.—The state medical association held its seventy-fifth annual meeting at Columbus, May 3-5, under the presidency of Dr. Charles Lukens, Toledo. Two clinics were held to permit the study of cases at first hand. Lieut.-Col. Henry Smith, Amritsar Punjab, India, conducted the eye clinics, and the skin clinic was conducted by Dr. Charles J. Shepard, Ohio State University College of Medicine, Columbus, with the assistance of other dermatologists in attendance. Dr. J. Rilus Eastman, University of Indiana, Indianapolis, and Dr. Reuben Peterson, University of Michigan, Ann Arbor, presented papers. Dr. Wells Teachnor, Columbus, was elected president; Dr. Herbert M. Platter, Columbus, treasurer, and Donald K. Martin, executive secretary for the ensuing year. The 1922 convention will held at Dayton.

OKLAHOMA

Antihealth Legislation.—The Oklahoma Legislature has adjourned after enacting bills creating a separate board for chiropractors; creating a separate board for osteopaths and allowing them to administer any drugs, the use of which is taught in their schools, and requiring the instillation of 1 per cent. silver solution in the eyes of new-born infants. The legislature refused to pass laws for the examination of cooks, waiters and food handlers to determine freedom from venereal infections; for the establishment of bathrooms in schools with more than two hundred pupils and for the appropriation of money for public health work. Practically all health appropriations were greatly reduced.

PENNSYLVANIA

Gift to Medical College.—By the will of Daniel Baugh a legacy of $150,000 has been left to Jefferson Medical College to be used for the salary of the professor of anatomy and director of the Daniel Baugh Institute of Anatomy and Biology.

Beer Not Medicine.—According to a resolution adopted unanimously by the Harrisburg Academy of Medicine, beer is not medicine now, and never was. A copy of the resolution will be forwarded the judiciary general committee of Congress.

Philadelphia

Personal.—The appointments of Dr. Samuel S. Woody as professor and Dr. Theodore Le Boutillier as assistant professor of epidemic contagious diseases in the Graduate School of Medicine of the University of Pennsylvania, have been made for the ensuing year.

SOUTH CAROLINA

State Meeting of Four Medical Associations.—The seventy-third annual meeting of the state medical association was held at Columbia, April 19-20, under the presidency of Dr. Washington P. Timmermann, Batesburg. The state public health association, the state nurses association, and the state hospital association, held meetings in Columbia the same week and the four organizations held a joint meeting on the last day of the medical session. Among those delivering addresses were Dr. Watson S. Rankin, Raleigh, N. C., secretary, North Carolina State Board of Health; Dr. James K. Hall, Richmond, Va., secretary, Tri-State Medical Association, and Dr. George Walker, Baltimore. Dr. Walker's subject was "Abolition of Venereal Disease," and the medical association went on record as enforcing the suggestion that public prophylactic stations be established in the state for the control of venereal diseases. Dr. Charles J. Hatfield, Philadelphia, secretary of the National Tuberculosis Association, addressed the tuberculosis section on Tuesday. The following officers of the medical association were elected for the ensuing year: Dr. Harry L. Shaw, Sumter, president; Drs. Drayton M. Crosson,

Leesville, Henry W. Rice, Columbia, and L. G. Sadler, Union, vice presidents. Dr. Edgar A. Hines, Seneca, was reelected secretary-treasurer. The 1922 convention will be held at Rock Hill. The society recommended the reappointment of the entire state board of health.

TENNESSEE

Personal.—Dr. Eugene M. Holder has been elected chief of the division of surgery at the College of Medicine, University of Tennessee, Memphis, to succeed Dr. McIver Woody, resigned. Dr. Woody has accepted a similar position with Baylor University, Dallas, Texas.

State Medical Meeting.—The eighty-eighth annual meeting of the state medical association was held at Nashville, April 12-14, under the presidency of Dr. Leon L. Sheddan, Knoxville. The eye, ear, nose and throat section held a separate meeting following a dinner at the Tulane Hotel, at which Dr. John Green, St. Louis, was the principal speaker. The following were elected officers of the society for the ensuing year: president, Dr. William Britt Burns, Memphis; vice presidents, Drs. Alexander B. Dancy, Jackson, Leonard W. Edwards, Nashville, and George T. Zerbe, Jingo, West, Middle and East Tennessee, respectively; secretary, Dr. Olin West, Nashville; treasurer, Dr. Joseph F. Gallagher, Nashville; delegate to the American Medical Association, Dr. Landon A. Yarbrough, Covington, and alternate, Dr. Wesley J. Breeding, Sparta.

VIRGINIA

Recommendations of the Commission on Medical Education in Virginia.—At its final session, held in Richmond, May 2, the Commission on Medical Education in Virginia adopted a majority report favoring the location of the single-state supported medical school in Richmond, this school to be the Medical Department of the University of Virginia. On the policy of consolidation and of making the combined school the medical department of the University of Virginia the commission was unanimous. On the question of location five of the nine members of the commission voted in favor of Richmond. One member of the commission voted against the majority report without expressing a preference as to location, on the ground that a survey by an outside agency is necessary to settle the matter. By the terms of the legislative act creating the commission, these recommendations now go to the Boards of Visitors of the University of Virginia and the Medical College of Virginia, and these boards in joint session are to attempt to agree on a plan of consolidation, based in whole or in part on the recommendations of the commission. If they agree, their plan is to be submitted to the legislature of 1922 for adoption or rejection. If they do not agree, the governor is to transmit the report of the commission to the legislature with whatever recommendations he may see fit to make.

GENERAL

Air Service Meeting.—The Air Service Medical Association of the United States will hold its annual meeting in Boston, on Wednesday, June 8, in the Administration Building of the Harvard medical group.

American Surgeons Honored.—The Council of the Royal College of Surgeons of Ireland, on April 26, resolved to confer honorary fellowship on the following American surgeons: Drs. William J. Mayo and Charles H. Mayo, Rochester, Minn.; George Emerson Brewer, New York; George W. Crile, Cleveland; Richard H. Harte and William W. Keen, Philadelphia, and Albert J. Oschner, Chicago. The ceremony of conferring the honors will take place in the autumn.

Italian Physicians Association of America.—To stimulate the organization of scientific groups of Italians in various parts of the country and in an attempt to organize them into a national society, the Italian Physicians Association of America will hold its first annual meeting and dinner under the presidency of Dr. Michael Osnato, New York, on June 4, at New York City. The Italian Medical Society of Massachusetts and Italian physicians in other cities of America who have received their education either here or abroad are invited.

Personal.—Dr. Simon Flexner, the director of the Rockefeller Institute for Medical Research, has been elected an honorary fellow of the Royal Society of Tropical Medicine and Hygiene of London at a meeting of the council of that society, held April 8, 1921.——Colonel Henry Smith, I. M. S. Punjab, India, will address the Cincinnati Academy, May 9, the Texas State Society at Dallas, May 12, and hold a clinic, May 13, on Intracapsular Extraction. He will address the Illinois State Medical Society, May 16, and the Pittsburgh Medical Society on May 23. He will be at the annual session of the American Medical Association, Boston, and American Ophthalmological Society at Swampscott, June 15.

Hearing on Sheppard-Towner Bill.—The Sheppard-Towner infancy and maternity bill was attacked and defended, May 5, at a hearing before the Senate Education Committee. Dr. Alfred H. Quessy of Fitchburg, Mass., in voicing opposition to this measure said, "There is no evident desire on the part of the American public for such legislation. The women who are clamoring for it are those that have time to waste and money to burn. This legislation comes from the erroneous idea that the health of the American nation has gone below the general standard. This is not the case." The bill was also attacked by Dr. Charles O. Donovan of Baltimore as a contravention of the general welfare clause of the Constiution and as an additional burden on taxpayers. Mrs. Maud Wood Park, president of the National League of Women Voters, and Miss Julia Lathrop, head of the Children's Bureau of Labor Department, endorsed the measure.

Bill for Welfare Department.—The measure sponsored by President Harding and his physician at the White House, Gen. Charles E. Sawyer, providing for the reorganization of the health, educational and social welfare activities of the government has been presented to Congress. In the Senate it was introduced by Senator William S. Kenyon of Iowa and in the House of Representatives by Representative S. D. Fess of Ohio. A new department with a cabinet officer is established with the title of the Department of Public Welfare. The proposed new department is divided into four divisions with an assistant secretary at the head of each. They are: division of education, division of public health, division of social service, division of veteran service. The President is authorized to transfer any bureaus, boards or commissions operating in other departments to the new department. Provision is made for the abolition of the office of Surgeon-General of the U. S. Public Health Service, this service to be assigned to the new division of public health. The Bureau of War Risk Insurance would also be abolished and assigned to the new division of veteran service. The Bureau of Pensions would be transferred to the proposed veteran service.

LATIN AMERICA

Public Health Department Accepts Classification of Council on Medical Education of American Medical Association.—In passing on the validity of medical diplomas submitted from American colleges, the National Board of Public Health of Mexico has decided to base its opinions on the classification of medical schools by the Council on Medical Education of the American Medical Association.

Government Services

To Federal Prohibition Directors

The Federal Prohibition Commissioner, Bureau of Internal Revenue, Washington, D. C., on May 2, issued the following circular of information to federal prohibition directors:

On and after May 16, 1921, hospitals holding permits to use liquor in the treatment of patients, will be permitted to withdraw liquor from bonded warehouses and distillery free warehouses. Forms 1410-A should not be issued to directors prior to May 16, 1921, for the withdrawal of liquor from bond by hospitals. Distillers will not make shipment of liquor to hospitals on any permit Form 1410-A, dated prior to May 16, 1921.

Private Practice by Army Medical Officers

Regulations have been prepared by the War Department on the subject of the private practice of officers of the Medical Corps of the Army. It is provided that, if residents in the vicinity of a military post or the home of a medical officer desire his professional services, an Army medical officer may render his services when it does not interfere with the proper performance of his official duties. The rules of the War Department, however, do not permit a medical officer to open an office for the purpose of engaging in civil practice. Private or civilian practice by medical officers in civil life will be restricted to consultation practice and to emergency, medical or surgical work.

Foreign Letters

LONDON

(From Our Regular Correspondent)

April 11, 1921.

Dust in Expired Air

In a letter to the *Lancet*, Dr. J. S. Owens, an authority on atmospheric pollution, has reported some experiments of great importance, as they traverse the current teaching that the air passages are an efficient trap for the removal of matter suspended in the inspired air. Tyndall stated that expired air is optically pure, and it is generally assumed that air entering the lungs through the nose is purified from all suspended matter before it reaches the deeper part of the lungs. Having some doubts as to this assumption, Dr. Owens made experiments. He tested a sample of air during a slight smoke haze in November in London, and found that it contained 1.92 mg. of suspended matter per cubic meter. He then filled a small rubber balloon with ordinary tidal expired air, taking care that the balloon was washed out by filling with expired air and emptying several times. It was found to contain 1.28 mg. per cubic meter. Thus, in ordinary breathing the expired air contained about 70 per cent. of the suspended impurity which entered during inspiration. Doubtless some of the suspended matter in the expired air was deposited on the walls of the balloon, but this would not affect the result much. A similar experiment was then made with "reserve air." The balloon was thoroughly washed out with reserve air and then filled after the end of a long inspiration. The reserve air was found to contain about 60 per cent. of the dust of the inspired air. These observations were checked by using an apparatus by which a jet of air $\frac{1}{1000}$ inch in diameter can be blown on a microscopic slide at a distance of $\frac{1}{16}$ inch. The result is that a certain proportion of the suspended particles strike and adhere to the slide. A few cubic centimeters of ordinary London air thus produce a black spot visible to the naked eye. Expired "tidal" and "reserve" air yielded a black spot. Ordinary London air yielded particles which were all black and varied in diameter from $\frac{1}{100000}$ to $\frac{1}{20000}$ inch. Expired air yielded similar particles.

Three Deaths from Working at the Radium Institute

Three deaths have occurred from working at the London Radium Institute, but for some reason the authorities have made no statement on the matter. The press first obtained the news in consequence of a communication by Dr. Bordier to the Académie de Médecine of Paris. The three persons who have died were a sister from Ireland and two laboratory workers. No details could be obtained from the secretary of the institute, who stated to a press representative that "the regulations make all matters concerned with the institute and its works unavailable for publication until authorization has been given by the committee." The deaths appear all to have been due to aplastic anemia, which, as stated in a recent letter to THE JOURNAL is a newly recognized danger to workers both with radium and with the roentgen ray, and to which disease a leading roentgen ray authority, Dr. Ironside Bruce, recently succumbed. At the Radium Institute every possible precaution is taken to safeguard the staff. The following rules are enforced: No nurse or attendant habitually applying apparatus should work continuously for more than three months. This period of work should be followed by a change of occupation or rest for an equal time. All workers should have at least two clear holidays a week in the open air. Blood examinations are made frequently of every person employed at the institute, even of those who are never near radium, such as porters, servants and messengers. On the slightest sign of anemia, work is suspended. No person is permitted to touch radium with the naked fingers. It is handled with special instruments, and there is always a lead screen between the operator and the radium. Triple wrappings of lead and rubber are around the radium when it is applied to a patient. But from touching the apparatus, nurses and attendants in time suffer from dermatitis and their nails pare away. There is never the slightest reluctance to continue the work. The members of the staff carry on with quiet courage. At present the nursing staff consists of six women, three male attendants and three laboratory operators. Two girls are engaged in the preparation of radium dressings.

Resignation of Dr. Addison, the Minister of Health

Dr. Addison, the first man to preside at the newly created ministry of health, has resigned. The ministry was created in June, 1919, and its first duties were the unification of half a dozen government departments which dealt with various matters of public health. The housing problem, which had become acute because of the stoppage of building operations during the war, had also to be attacked. Dr. Addison, before he entered politics, was an anatomist and had been lecturer at St. Bartholomew's Hospital. An earnest reformer, he showed both energy and skill in his new field. He carried out the difficult work of reorganizing the medical service with success; but, owing to the obstruction of the trade unions, he could make little progress with housing. Intrenched in their calling, the bricklayers not only refused to lay more than a minimum of bricks, but prevented the admission of ex-service men, although the work to be done far exceeded that which was being performed. His schemes of reform aroused the animosity of politicians, who charged him with extravagance. A press campaign was organized against him. He was described as a bureaucrat whose desire was to socialize the medical profession and destroy the independent physician. This was most unfair misrepresentation, but it contained that minimum of truth which is so effective in the hands of unscrupulous politicians. The whole history of public health administration is one of progressive socialization of medical service. It was impossible for Dr. Addison, as it will be for any other minister of health to carry out any reforms without increasing socialization. No reason is given for his resignation, but it seems to have been due to disgust with the manner in which he has been criticized.

PARIS

(From Our Regular Correspondent)

April 15, 1921.

The Inspection of Bakeries

Dr. Réné Wibaux recently published in the *Revue d'hygiène* an interesting article on the need of organizing the inspection of bakeries. During the war, Wibaux had an opportunity of inspecting all the bakeries of Lille. At the time of the German occupation of this city, the population was supplied with bread by the Comité d'alimentation, working under the auspices of the Commission for Relief in Belgium, organized by the government of the United States. The bread furnished by this committee was baked, for the most part, in the bakeries of the city. During the summer of 1916, the organizers of the food distribution decided to give some form of recompense to the bakers who had shown themselves most deserving. Inspectors were selected to make an estimate of the value of the various phases of the work. Among other things, hygienic factors and general cleanliness were, of course, assigned definite values, and it was to Wibaux that this particular phase of the inquiry was delegated. In his report he stated that most of the bakeries were far from

clean. He said that no one would be willing to eat the bread if he knew of the insanitary conditions prevailing about certain kneading troughs. In the eighteenth century the kneading was done with the feet. In our day the methods are not more commendable than then; for, though the feet have been replaced by the hands in the performance of the work, all the eliminations of the nose and mouth are commonly projected into the dough. The conclusion that is forced on us by a study of Wibaux's report is that bread should be subjected to a careful inspection the same as are all products intended for raw consumption. There is at this point a gap in our legislative enactments, which should be filled without delay. Until such legislation can be forthcoming, it behooves us to encourage such bakeries as offer us the best guarantees of cleanliness. In order to be conducted as it should be, the baking industry requires considerable capital, and, under present conditions, only by means of extensive cooperation can bakeries be established that will measure up to the requirements of the hygienists. Wibaux recommends also the creation of schools wherein baking under hygienic conditions may be taught. Such schools could be built up on the basis of schools of industrial practice such as already exist.

Books for the Blind

The Association Valentin Haüy, founded for the benefit of the blind, has recently deposited in six municipal libraries of Paris, for circulation among the blind, a number of special works printed in the braille system. These books will be lent on the same conditions as are the ordinary books of the municipal libraries. These special works will be renewed by the association, from time to time, as needed.

BERLIN

(From Our Regular Correspondent)

April 2, 1921.

The Financial Need of the Berlin Student Body

Before any students could become participants in the Quaker Relief Fund, during the winter semester 1920-1921, they were obliged to fill out a questionnaire. If the questions were clearly answered by the applicant, it was not difficult to decide whether or not his financial condition entitled him to relief. The questionnaire contained questions in regard to the financial circumstances of parents; the number and economic condition of brothers and sisters; the amount of assistance received from home; income from outside employment and the nature of such employment; the place where the applicant secured his meals and the price he paid for them; his place of residence and the cost of his room, and other similar questions. Approximately 1,000 questionnaires were filled out and turned in, all of which were carefully examined by the Quaker Commision, to which three students were attached. Only the 350 students who should prove to be the most needy could be given relief. From their statements the generalizations that are to follow have been deduced. In order to secure a uniform gage by which to compare the financial condition of the parents of the student applicants, the income of the father, or of the mother, was divided by the number of persons supported by such income. In the case of 102 students the annual income of the head of the family yielded less than 1,500 marks ($23) per family member; the families of seventy-one students had from 1,500 to 2,500 marks per member, and the families of only nine of such students had from 4,000 to 5,000 marks ($61 to $77) per member, as their annual income.

The assistance that these students received from home varied with the family income. Only 103 received a regular remittance from home. Of these, twenty-three received more than 200 marks ($3.08); twenty-one received 100 marks or less, and sixty-six received from 100 to 200 marks per month. According to the estimate of the social statistician Dr. Kuczynski, the minimal sum required by a man for bare existence in Berlin in December was above 600 marks. These unfortunate financial conditions force upward of 30 per cent. of the 350 students whose applications for relief could be considered to earn part of their means of support while pursuing their studies. The amounts that they are thus able to earn vary. Thirty-four students earned from 200 to 700 marks (from $3.08 to $10.78) per month; forty-seven students earned from 100 to 200 marks per month, while the rest were able to add only 100 marks to their monthly allowance. Sixteen students stated that from their earnings they had to support their own family—wife and child, or a mother, or a younger brother.

As to the various means by which the students have sought to eke out their slender income: A considerable number have done tutoring in the homes or have had temporary employment in the banks; others have been telephone operators, office assistants, correspondents, writers, or piano players in cabarets; some have even served as porters, sign tackers and mine laborers, during the vacations, endeavoring thus to secure the funds absolutely needed. Not only the students themselves, but in many cases their parents and brothers and sisters have taken up forms of work that formerly would scarcely have been regarded as in keeping with their social status. Where we find the son laboriously working his way through college by giving lessons and by taking on office work, the father is often an ordinary laborer or following some petty industry. If the father is dead and the family is deprived of its bread-winner, as was the case with regard to a third of the applicants, the mother often goes out to work to help along, even though, as was often stated, she was past 60 years of age. Some of the mothers serve as seamstresses in garment factories; others as correspondents or stenographers, while others take roomers. The sisters are also often employed outside, either as seamstresses, postal clerks or house maids. The younger brothers were often waiters or laborers. As to meals: Forty of the 350 students stated that they had no warm dinners, subsisting mainly on bread, 160 gave 2.50 marks (four cents) and less as the price they paid for their dinner in a restaurant, and what that means with present prices must be clear to everybody. Thirty of those who took their meals at home were in very straitened circumstances and did not seem to have enough to eat. For a furnished room forty-one of the 117 who do not live at home, pay 50 marks (77 cents) or less per month; sixty-two pay from 50 to 100 marks, and only fourteen paid more than 100 marks. It goes without saying that with the 350 students to whom relief was granted by the Quaker Relief Fund, the number of needy students is by no means exhausted. It may be safely said that a large number, in fact, most of the 1,000 whose applications were rejected, are likewise sorely in need of material assistance, though their condition is not quite so bad as that of the 350 whose applications were accepted. It is also to be considered that only those who applied to the Quaker Commission for relief made out statements of their financial condition. All those who are in a bad way financially, but are provided at least with a warm dinner, even though they may not be able to partake of it until after 3 o'clock, when they have finished their outside employment, did not fill out a questionnaire. Very few of those rejected had a monthly allowance of 400 or 500 marks; but only those with an allowance of less than 300 marks could be accepted, as the small number of places at the table still at the disposal of the commission necessitated a limitation of the accepted applicants to the most needy.

Marriages

JOHN NELSON NEILL OSBURN, Minneapolis, to Mrs. Barbara Stephens Zane of Sacramento, Calif., April 24.

HOWARD LEE CECIL, Baltimore, Md., to Miss Bessie Walker Omohundro of Reedsville, Va., April 30.

JABEZ HERRING WILLIAMS, Camden, N. J., to Miss Alice Blakney, at Philadelphia, Pa., April 23.

WILLIAM FREDERICK SKELLEY to Miss Ella B. Gilroy, both of Davenport, Iowa, May 4.

EPHRAIM FELDMAN to Miss Rea Cohen, both of Memphis, Tenn., May 8.

Deaths

Elliott Thomas Brady, Roanoke, Va.; Jefferson Medical College, 1886; aged 55; a member and in 1909 president of the Medical Society of Virginia; for many years a member of the staff of the Southwestern State Hospital, Marion, Va.; at one time roentgenologist to the Allegheny General Hospital, Pittsburgh; surgeon of the *S. S. Suriname* of the United Fruit Company; was found dead in his stateroom on the liner, February 14, from heart disease.

Robert Clark Yenney, Portland, Ore.; University of Pennsylvania, Philadelphia, 1892; aged 52; a member of the Oregon State Medical Association; lieutenant-colonel, M. C., U. S. Army, and discharged, May 22, 1919; a veteran of the Spanish-American War; professor of clinical medicine in the University of Oregon, Portland; secretary of the state board of health for five years; died, April 25, from heart disease.

Robert Merida Brown ⊕ Saranac Lake, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1905; aged 42; surgeon of the General Hospital, Saranac Lake; died, April 30, from septicemia following an infected wound of the hand sustained while performing an operation.

Kenneth M. Ferguson, Indianapolis, Ind.; College of Physicians and Surgeons, Baltimore, 1882; aged 57; a member of the Indiana State Medical Association; assistant superintendent of the Central Indiana Hospital for Insane, Indianapolis; died, April 24, from cerebral hemorrhage.

William Breakey Lewitt ⊕ San Francisco; Detroit Medical College, 1877; College of Physicians and Surgeons in the City of New York, 1878; aged 63; emeritus professor of pediatrics in the University of California, Berkeley and San Francisco; died, April 25, from myocarditis.

Ralph W. Montelius, Mt. Carmel, Pa.; Jefferson Medical College, 1876; aged 66; a member of the Medical Society of the State of Pennsylvania; a veteran of the Spanish-American War; president of the local board of health; died, April 19, from pneumonia.

Joseph Coleman Walker, Lambert, Miss.; Atlanta (Ga.) College of Physicians and Surgeons, 1913; aged 30; died in Memphis, Tenn., April 24, from gunshot wounds received in an altercation with a farmer of Lambert, a few days before.

Peter Langrave Suits, Tribes Hill, N. Y.; Albany (N. Y.) Medical College, 1879; aged 76; a member of the Medical Society of the State of New York; died, April 21, from injuries received in an automobile accident, January 19.

Samuel L. Dreibelbis, Reading, Pa.; Hahnemann Medical College of Philadelphia, 1871; aged 73; obstetrician to the Homeopathic Hospital, Reading; a practitioner of Reading for half a century; died, April 13, from neuritis.

Walter Israel Sunburnt, San Francisco; College of Physicians and Surgeons of San Francisco, 1899; aged 55; lieutenant, M. C., U. S. Army, and discharged, Dec. 26, 1917; died, April 10, from pneumonia following influenza.

Frederick Earl Walker ⊕ Long Beach, Calif.; State University of Iowa, Iowa City, 1898; aged 49; died, April 24, from septicemia following an infected wound of the hand sustained while performing an operation.

Archibald Lawrence Muirhead, Omaha; University of Michigan, Ann Arbor, 1893; aged 57; professor of pharmacology, and from 1913 to 1916 dean of John A. Creighton Medical College; died, April 24.

George H. Halberstadt ⊕ Pottsville, Pa.; University of Pennsylvania, Philadelphia, 1878; aged 65; surgeon for the Philadelphia and Reading Coal and Iron Company; died, April 28, from pneumonia.

Charles H. McIlwaine, Newark, N. J.; University of Pennsylvania, Philadelphia, 1877; aged 77; founder and for ten years director of the Trenton Eye and Ear Infirmary; died, April 21, from uremia.

Samuel L. Kurtz, Reading, Pa.; Jefferson Medical College, 1854; aged 88; a member and in 1891 president of the Medical Society of the State of Pennsylvania; a veteran of the Civil War; died, April 21.

Arthur W. Wellesley Olcott ⊕ Tucson, Ariz.; St. Louis Medical College, 1887; aged 55; at one time health officer of Tucson; died, April 19, from injuries received in an automobile accident.

William Augustus Newell, Philadelphia; University of Pennsylvania, Philadelphia, 1907; aged 40; lieutenant, M. C., U. S. Army, and discharged, March 7, 1919; died at Clifton, Pa., April 29.

Charles Aden Allen, Memphis, Tenn.; University of Tennessee, Memphis, 1915; aged 40; lieutenant, M. C., U. S. Army, and discharged, Dec. 26, 1918; died, April 26, from tuberculosis.

Elkanah K. May, Maytown, Ky.; Vanderbilt University, Nashville, Tenn., 1898; aged 47; a member of the Kentucky State Medical Association; died, April 2.

Okey Johnson Casto, Hutchinson, Kan.; University of Louisville, Ky., 1891; aged 54; a member of the Kansas Medical Society; died, April 14.

John Franklin Park, McKinney, Texas; Chattanooga (Tenn.) Medical College, 1901; aged 60; died, April 19, from cerebral hemorrhage.

Albert McClintock, New Moorefield, Ohio; Columbus (Ohio) Medical College, 1888; aged 67; died, April 21, from cerebral hemorrhage.

Richard S. Keeler ⊕ St. Petersburg, Pa.; College of Physicians and Surgeons, Baltimore, 1885; aged 59; died, April 17, from heart disease.

Luther Brown, Rockford, Iowa; Rush Medical College, 1866; aged 83; a veteran of the Civil War; died at Pensacola, Fla., January 19.

Charles Russell Foutche, Berkeley Springs, W. Va.; College of Physicians and Surgeons, Baltimore, 1885; aged 59; died, April 12.

Lewis D. Coy, Canfield, Ohio; Eclectic Medical Institute, Cincinnati, 1876; aged 72; a veteran of the Civil War; died, April 12.

Charles Moore Robinson, Nowata, Okla.; Universities of Nashville and Tennessee, 1901; aged 43; died, April 5, from tetanus.

Arthur Lewis Root, New York; University of the City of New York, 1883; aged 62; died, April 24, from heart disease.

John N. Southern, Monroe City, Mo.; University Medical College of Kansas City, Mo., 1895; aged 49; died, April 11.

George Glanville Rusk, Baltimore; University of Maryland, Baltimore, 1867; aged 74; died, April 14, from pneumonia.

Jacob Londoner, Brooklyn; University of Dorpat, Russia, 1891; aged 58; died, April 27, from cerebral hemorrhage.

Harvey Van Ness Hicks, Preston, Iowa; Chicago Medical College, 1872; aged 72; died, April 12, from carcinoma.

Charles Chandler Haines ⊕ New York; Long Island College Hospital, Brooklyn, 1906; aged 45; died, April 12.

Adolphus F. Kerr ⊕ Clifton Forge, Va.; Missouri Medical College, St. Louis, 1877; aged 72; died, April 15.

Herbert B. Lush, Winterpock, Va.; Medical College of Virginia, Richmond, 1896; aged 54; died, March 6.

Francis Diwage Wright, St. Louis; Rush Medical College, 1882; aged 65; died, April 18, from septicemia.

A. E. Sally, Augusta, Ga.; University of Georgia, Augusta, 1885; aged 63; also a druggist; died, April 14.

Alexander Boyd Hawkins, Raleigh, N. C.; Jefferson Medical College, 1847; aged 96; died, April 14.

Adelbert N. Russell, Cleveland; University of the City of New York, 1874; aged 70; died, April 15.

Sol Ringolsky, Oakland, Calif.; Gross Medical College, Denver, 1893; aged 60; died, March 27.

George B. Gilbert, Louisville, Ky.; University of Louisville, Ky., 1901; aged 45; died, April 14.

Horace C. Miller, Rensselaer, N. Y.; Albany (N. Y.) Medical College, 1873; died, April 11.

⊕ Indicates "Fellow" of the American Medical Association.

Correspondence

MICHIGAN TURNS DOWN CHIROPRACTORS

To the Editor:—The chiropractors have conducted campaigns in several states to secure the enactment of laws setting forth the privileges and right to practice for members of that cult of deluded manipulators and to create independent chiropractic examining boards. The attempt was made in Michigan. It was unsuccessful solely because the profession in Michigan effectively registered its objections.

The chiropractic combine sent a lobbyist to Lansing. He, in turn, had several assistants. Secrecy was the watchword. A bill was introduced in the house, and the first intimation we had was its passage by the house. The bill was a vicious one and required only ordinary education and three years of six months in any so-called chiropractic college as educational requirements. It also created a chiropractor's board with rather broad authority. The bill was sent to the senate.

President McLean of our state society, and several members from Detroit, Flint and Grand Rapids, went to Lansing. The chairman of the senate committee to which the bill was referred assured these representatives that a hearing would be given if the committee considered the bill. Time passed and the legislature was almost in the last week of its session. On Saturday afternoon, while the chairman of the committee was out of Lansing, a motion in the senate called the bill out of the committee and placed it on its third reading to come up on Monday, the last week of the legislature. Adjournment had been agreed on for Friday.

This information did not reach us until late on Saturday. A telegram was then sent to each one of the secretaries of our county societies, advising them of the situation and urging them to bring every influence and force to bear on their senators from their counties. In several of our larger cities, interviews were held with influential citizens, hospital boards and civic officials, and they too conveyed their disapproval to the senate. The net result was that some 2,100 telegrams poured into Lansing on Monday morning and were delivered to members of the senate. When the bill came up for a vote there were yeas 1, nays, 67—a vote that recorded the result of registering our objections in a most emphatic manner.

Wednesday a long distance telephone message was received, advising that the governor was endeavoring to secure a reconsideration of this vote. President McLean and Dr. J. B. Kennedy of Detroit immediately got into communication with the governor and arranged for an interview at 7 o'clock Thursday morning. The appointment was kept, and during a three hour session the governor was informed that no compromise would be entered into: that he might force a reconsideration, but that 4,000 physicians in Michigan were ready to make such an attempt a most costly one to any one who participated in such a move. It was also learned that the governor had made a preelection promise to create a chiropractic board, etc. The conference was exceedingly warm. The governor stated that, had the profession not snowed under the senate with these telegrams, the bill would have had smooth sailing. Finally the governor called in the newspaper men and announced that the bill was killed. The legislature adjourned on Friday.

I am sending you this information for the purpose of substantiating as well as demonstrating what I have frequently declared possible if our members would only exhibit and exercise their influence. During the last several months, we have been urging through our state journal and by personal conversation that they cultivate the acquaintance of their local representatives in the legislature. We also advised that they hold themselves in readiness for prompt action on the receipt of a telegram. When the emergency came, the response was indeed gratifying, and the end-result was most satisfactory.

It was a remarkable rallying of our forces on the shortest possible notice. Our county secretaries are entitled to every praise for the manner in which they secured action on the part of their members. The legislative committee of the Wayne County (Detroit) Society merits most honorable mention. In brief, every one contributed to this successful demonstration. It reveals again what can be accomplished if we but exert ourselves.

I am wondering how much the chiropractors spent.

F. C. WARNSHUIS, M.D., Grand Rapids, Mich.
Secretary, Michigan State Medical Society.

POSSIBLE INVASION OF THE ENDOMETRIUM BY SPIROCHETES

To the Editor:—Editorial comment on Colles' law (THE JOURNAL, April 23, p. 1171) prompts the mention of a pertinent observation. It is to be recalled that intra-urethral chancre in the male has often been detected, though perhaps oftener overlooked because mistaken for or masked by gonorrhea. It seems unlikely that this is the only mucous membrane vulnerable to the spirochete. Again, the testes are proved to be habitats of these parasites; and semen apparently normal has been shown to contain them, both by the microscope and through animal inoculation—in one instance thirteen years after the man's infection (Eberson and Engman). Hence the endometrium must be more frequently exposed to invasion by the spirochete than is any other cylindric epithelium.

A married man under my observation was infected by a barber with syphilis in the cheek. Though he exhibited no lesions of the genitals, and neither chancre nor secondaries were detected in his wife, yet she developed a positive Wassermann reaction, and spirochetes were found in discharges from the cervix. Though not impregnated by him she subsequently bore to a second, syphilis-free husband a tainted child. At this time her Wassermann reaction was negative, a not uncommon phenomenon in women known to be syphilitic.

It seems possible that a woman's endometrium can be infected with syphilis through semen independently of impregnation; that such infection may escape detection unless revealed by the Wassermann reaction or by tainted offspring; and that Colles, working seventy years before the advent of the Wassermann test, and therefore detecting the infection only in father and fetus, erroneously ascribed the fetal infection directly to the semen, and the mother's immunity to the fetus. My patient, who acquired symptomless syphilis years before tainting her child, possibly differs from many Colles' law mothers only in that her infection was discovered before her impregnation.

WILLIAM T. BELFIELD, M.D., Chicago.

"AURICULAR FLUTTER AND FIBRILLATION IN PREGNANCY"

To the Editor.—In an article on "Auricular Flutter and Fibrillation in Pregnancy," by Clarence P. Thomas (THE JOURNAL, April 30, p. 1227) appears the statement, "I have been unable to find, however, in a thorough search of all the literature, any mention of cardiac arrhythmias in pregnancy, or any cases of auricular flutter or fibrillation accompanying that state." Charles H. Miller (*Lancet*, Nov. 2, 1912) reported a case of auricular fibrillation occurring during pregnancy. His patient, who was on the service of Dr. James Mackenzie, had had rheumatic fever and chorea three times. Cardiac decompensation had occurred three times, and during one of these occasions the patient gave birth to a full-term child.

This was her fifth pregnancy. Her pulse during all this time was continuously and completely irregular, and two pulse tracings accompanying the article showed the irregularity. The patient received digitalis therapy and made a good recovery.

J. P. Greenberg, M.D., Chicago.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

ANILIN-XYLENE-ACETONE CLEARING FLUID—NEUTRAL CANADA BALSAM—STAINING SPIROCHETES IN TISSUE AND SPUTUM

To the Editor:—1. Can you give me the method of using anilin-xylol-acetone clearing fluid to do away with the use of alcohol?

2. Please give method of staining spirochetes in lung and sputum in pulmonary tuberculosis.

3. How is neutral Canada balsam prepared to secure a truly neutral preparation, one that will keep?

J. Whaley.

Answer.—1. The anilin-xylene-acetone clearing fluid is prepared by mixing together equal parts of each of the three ingredients. The mixture is used like any other clearing fluid.

2. Several methods for staining spirochetes are in use. One of the simplest methods is Giemsa's. The air-dried film is fixed with chemically pure methyl alcohol and stained with Giemsa's stain for twenty hours, using one drop of the stain to 1 c.c. of water. The spirochetes are stained a violet red, *S. refringens* being blue. Giemsa's stain consists of azur II-eosin, 3 gm.; Azur II, 0.8 gm.; glycerin (C. P.), 125 gm.; methyl alcohol (C. P.), 375 gm. The India ink method is also used extensively. A drop of the fresh serum from the lesion, or the sputum, is placed at one end of a glass slide and immediately mixed with a small drop of Gunther-Wagner India ink (Chin-Chin liquid pearl ink). The mixture is spread and allowed to dry. The field is brown or black; the spirochete is colorless and highly refractile. The method of Levaditi and Manouélian is regarded as being especially useful for the detection of the spirochete in tissues. Small pieces of tissue are fixed in 10 per cent. liquor formaldehydi for twenty-four hours and hardened in absolute alcohol for twenty-four hours. After a thorough washing in distilled water, the tissue is placed in 50 c.c. of a mixture consisting of 1 per cent. aqueous solution of silver nitrate, 90 c.c., and pyridin, 10 c.c. After two or three hours' exposure to room temperature, it is exposed to a 50 C. temperature for three or five hours; then immersed for three or four hours, at room temperature, in a freshly prepared solution of 4 per cent. aqueous solution of pyrogallol, 90 c.c.; pure acetone, 10 c.c., and pyridin, 15 c.c. It is removed from the reducing bath, dehydrated in absolute alcohol, cleared in xylene and embedded in paraffin. Cut sections are stained on the slide with a 2 per cent. aqueous solution of toluidin blue, and differentiated and dehydrated in absolute alcohol, oil of bergamot and xylene. The spirochetes are stained black; the ground work of the tissue is blue. Noguchi's method, which is somewhat similar to Levaditi's, is more especially useful for staining brain and cord sections.

3. Neutral Canada balsam is prepared by mixing equal parts of Canada balsam and petroleum benzin and filtering. The filtrate is put on a water bath, and the petroleum benzin evaporated; enough xylene is added to the residue to secure the proper consistency.

CALCIUM AS A THROMBOPLASTIC

To the Editor:—Please furnish me information on most desirable strength of solution, amount, preparation, etc., of calcium as an intravenous thromboplastic agent. Please omit my name.

H. E. L., Delaware.

Answer.—Calcium is generally employed for intravenous injection, in inaccessible hemorrhages, in the form of a 10 per cent. sterile solution of calcium chlorid, of which 5 to 10 c.c. are injected, at about 103 F., two to three times daily into the cubital vein. These injections must be given very slowly—the slower the better—for the intravenous use of calcium chlorid carries with it danger of producing collapse. It is important that not a drop of the solution escape outside the vein. Should this mishap occur, it causes severe pain and may produce necrosis. In such case the immediate application of hot moist compresses would be most likely to help. That such injections may be dangerous is shown by experiments such as those of Huebner and Rona. On injecting into cats from 0.12 to 0.27 gm. of calcium chlorid per kg., in 5 per cent. solution in the course of two to five minutes, there occurred one death from heart paralysis during the injection, marked transient heart irregularity in another case, and death of several of the animals within the next few days. These doses evidently exceed the therapeutic limits. That such dosage may produce marked circulatory disturbance in human beings is shown by the intravenous injections of calcium lactate in 1.25 gm. doses given to 5 and 6 kg. infants by Brown, MacLachlan and Simpson, who noted depression, ranging from drowsiness to almost complete collapse with dyspnea, lasting from 1 to 7 hours, as a result. Lowering of blood pressure produced by the intravenous use of calcium, which was noted among others in animal experiments by Fleisher and Loeb, may indeed be of considerable importance in the hemostatic action of these injections. Thus, Huebner and Rona report: "Not a drop of blood could be obtained from incisions into the ear and but little on venesection, evidently due to low arterial pressure."

CASTOR BEAN AS A POISON

To the Editor:—I had recently some cases of poisoning. Two children ate castor beans. The symptoms were like those of ptomain poisoning. I have several books on toxicology, but none give anything about castor bean poisoning. Please describe the best treatment in Queries and Minor Notes.

R. S. Wilson, M.D., Oilton, Okla.

Answer.—The castor-oil bean is the seed of *Ricinus communis*. In addition to a fixed oil (castor oil), which is relatively nontoxic, the seeds of the castor-oil plant contain an exceedingly toxic substance (or substances) called ricin. This belongs to a class of plant poisons called toxalbumins, a number of which are known. The toxalbumins are soluble in water but not in fixed oils; consequently castor oil contains no ricin. The toxalbumins are violent irritants to the mucous membrane, and possess agglutinizing action on blood corpuscles. They are more toxic in the blood stream than when taken by the stomach, as they are partly destroyed in alimentary digestion. Repeated small doses produce immunity. Five or six castor beans contain sufficient ricin to cause the death of a child, while a smaller number may produce violent gastro-enteritis, with nausea, headache, persistent vomiting, colic, bloody diarrhea, thirst, emaciation and great debility. More serious intoxications cause somewhat frequent pulse, cold sweat, icterus and convulsions. Death occurs in from six to eight days from the convulsions or from exhaustion. The mortality is stated to be about 6 per cent. Usually the symptoms do not set in until after several days. The treatment consists in catharsis, rest in bed, heat to the extremities, and hypodermic injections of strychnin.

ARTICLES ON FIXATION ABSCESS

To the Editor.—Kindly give bibliography, old and new, on "fixation abscess" produced by subcutaneous injections of oil of turpentine and other substances as a treatment of acute infections. I will look for answer in Queries and Minor Notes. Please omit my name.

M. J. S.

Answer.—

Rathery, F., and Bonnard: Induced Typhoid Abscesses, *Bull. et mém. Soc. méd. d. hôp. de Paris* **44**: 285 (Feb. 27) 1920; abstr. The Journal, June 5, 1920, p. 1608.

Damade, R.: Typhoid Bacillus in Fixation Abscess in Typhoid, *J. de méd. de Bordeaux* **91**: 153 (March 25) 1920.

Cerioli, A.: Immunization and Fixation Abscesses, *Gazz. d. Osp.*, June 10, 1915; abstr. The Journal, July 31, 1915, p. 467.

Santi, E.: Fixation Abscess in Treatment of Puerperal Infection, *Ztschr. f. Geburtsh. u. Gynäk.* **76**: 1914; abstr. The Journal, July 18, 1914, p. 285.

Péhu and Pillon: Turpentine Fixation Abscess in Children, *Lyon méd.*, Dec. 7, 1913; abstr. The Journal, Jan. 17, 1914, p. 243.

Probst, L.: Fixation Abscess in Influenza, *Rev. méd. de la Suisse Rom.* **40**: 159 (March) 1920; abstr. The Journal, May 8, 1920, p. 1356.

Roumaillac: Fixation Abscess (Fochier's Method) Cures Neuralgia, *J. de méd. de Bordeaux* **90**: 250 (June 25) 1919; abstr. The Journal, Aug. 9, 1919, p. 455.

Vergeley, J.: Fixation Abscess in Treatment of Influenzal Pneumonia, *J. de méd. de Bordeaux* **90**: 57 (Feb. 15) 1919; abstr. The Journal, March 29, 1919, p. 967.

Montagnon: Fixation Abscess for Infants, *Lyon méd.*, Dec. 4, 1910; abstr. The Journal, Jan. 21, 1911, p. 227.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

CALIFORNIA: San Francisco, June 27-30. Sec., Dr. Charles B. Pinkham, 727 Butler Bldg., San Francisco.

DELAWARE: Wilmington, June 21-23. Sec., Dr. P. S. Downs, Dover.

FLORIDA: Jacksonville, June 13-14. Sec., Dr. William M. Rowlett, Citizens Bank Bldg., Tampa.

GEORGIA: Augusta, June 1-3 and Atlanta, June 8-10. Sec., C. T. Nolan, Marietta.

ILLINOIS: Chicago, June 20-23. Supt. of Registration, Mr. J. C. Dodds, Springfield.

IOWA: Iowa City, June 9-11. Sec., Dr. Guilford H. Sumner, Capitol Bldg., Des Moines.

LOUISIANA: New Orleans, June 9-11. Sec.-Treas., Dr. Roy B. Harrison, 1551 Canal St., New Orleans.

MICHIGAN: Ann Arbor, June 14. Sec., Dr. B. D. Harison, 504 Washington Arcade, Detroit.

MINNESOTA: Minneapolis, June 7-9. Sec., Dr. Thomas S. McDavitt, 539 Lowry Bldg., St. Paul.

MISSISSIPPI: University, June 21-22. Sec., Dr. W. S. Leathers, University.

MISSOURI: St. Louis, June 13-15. Act. Sec., M. E. Holliway, State House, Jefferson City.

NATIONAL BOARD OF MEDICAL EXAMINERS, Boston, June 14-21. Sec., Dr. J. S. Rodman, 1310 Medical Arts Bldg., Philadelphia.

NEBRASKA: Lincoln, June 8-10. Sec., Mr. H. H. Antles, Dept of Public Welfare, State House, Lincoln.

NEW JERSEY: Trenton, June 21-22. Sec., Dr. Alexander Macalister, State House, Trenton.

NEW YORK: Albany, Buffalo, New York and Syracuse, May 23-26. Ass't., Professional Examinations, Mr. Herbert J. Hamilton, State Education Bldg., Albany.

NORTH CAROLINA: Raleigh, June 21. Sec., Dr. Kemp P. Bonner, Morehead City.

OHIO: Columbus, May 31-June 1-3. Sec., Dr. H. M. Platter, State House, Columbus.

SOUTH CAROLINA: Columbia, June 28. Sec., Dr. A. Earle Boozer, 1806 Hampton St., Columbia.

TENNESSEE: Memphis, Nashville and Knoxville, June 10-11. Sec., Alfred B. De Loach, 1001 Exchange Bldg., Memphis.

TEXAS: Galveston, June 21-23. Sec., Dr. Thomas J. Crowe, 918-19 Dallas County Bank Bldg., Dallas.

VIRGINIA: Richmond, June 14-17. Sec., Dr. J. W. Preston, 511 MacBain Bldg., Roanoke.

WISCONSIN: Milwaukee, June 28-30. Sec., Dr. J. M. Dodd, 220 E. Second St., Ashland.

WYOMING: Cheyenne, June 6-8. Sec., Dr. J. D. Shingle, Cheyenne.

Kansas October Examination

Dr. Henry A. Dykes, secretary, Kansas State Board of Medical Registration and Examination, reports that 23 candidates were licensed by reciprocity at the meeting held at Topeka, Oct. 12-13, 1920. The following colleges were represented:

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Bennett Medical College		(1915)	Illinois
Northwestern University		(1902) Wisconsin, (1918), (1920)	Illinois
University of Illinois		(1905)	Missouri
State University of Iowa Coll. of Medicine		(1895), (1906)	Iowa
University of Minnesota College of Med. and Surg.		(1891)	Illinois
Barnes Medical College		(1897)	Missouri
Marion-Sims College of Medicine, St. Louis		(1895)	Missouri
St. Louis College of Physicians and Surgeons		(1898)	Iowa
St. Louis Medical College		(1868)	Missouri
St. Louis University School of Medicine		(1913), (1915), (1918), (1919)	Missouri
University Medical College, Kansas City, Mo.		(1907)	Missouri
College of Medicine of the University of Nebraska		(1909)	Nebraska
John A. Creighton Medical College		(1915), (1917) (1917)	Nebraska Missouri
Meharry Medical College		(1908)	Oklahoma
Medical College of Virginia		(1917)	Virginia

District of Columbia January Examination

Dr. Edgar P. Copeland, secretary, Board of Medical Supervisors of the District of Columbia, reports the oral and written examination held at Washington, Jan. 11-13, 1921. The examination covered 16 subjects and included 80 questions. An average of 75 per cent. was required to pass. Of the 4 candidates examined, 2 passed and 2 failed. Two candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Georgetown University School of Med.	(1915) 81.6,	(1920)	78
	FAILED		
Howard University		(1919)	72.1
Harvard University		(1904)	64.5

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Minnesota		(1898)	Minnesota
Meharry Medical College		(1895)	Georgia

Book Notices

A PHYSICIAN'S ANTHOLOGY OF ENGLISH AND AMERICAN POETRY. Selected and Arranged by Casey A. Wood, M.D., and Fielding H. Garrison, M.D. Cloth. Price, $4. Pp. 346. New York: Oxford University Press, 1920.

The collection of verse in this volume was originally intended as a birthday tribute to Sir William Osler, whose literary knowledge and judgment were of the keenest. He was a lover of poetry. The present selection consists of poems which the authors believe come close to life in both its pleasant and its serious aspects. With few exceptions, the poems selected are good and in excellent taste. Some poems which one would expect to find are not included. One misses "The Chambered Nautilus" of Oliver Wendell Holmes; "Crossing the Bar" of Tennyson; and especially "In Flanders' Fields" of John McCrae, the last certainly the outstanding poem of the great war and written by a physician. But why review an anthology! The authors know what they like and what they think we ought to like. We admire their judgment and are glad to have their choice. And we know where we can find the other things we like!

VENEREAL DISEASES: THEIR CLINICAL ASPECT AND TREATMENT. With an Atlas of 106 color and 21 half-tone illustrations. By J. E. R. McDonagh, F.R.C.S., Surgeon, London Lock Hospital. Cloth. Price, $20. Pp. 419. St. Louis: C. V. Mosby Company, 1920.

This volume contains the record of an enormous experience in venereal diseases. It covers syphilis, chancroid and gonorrhea, and has chapters on various collateral subjects. The clinical aspect of the subject is well and fully covered. The book is bountifully illustrated, most of the illustrations being in color and fairly good. The whole trouble about the book is that the reader never knows just where he is. When a book starts off in the present day with the proposition that the cause of syphilis is *"Leucocytozoon syphilidis"* and that *"Spirochaeta pallida* is only the adult male of a coccidial protozoon," the reader of it at once finds himself up in the air. Then when he goes on and finds that in the treatment of syphilis McDonagh recommends the intravenous injection of colloidal iodin, and the use of intramine along with arsphenamin and mercury and other things, he does not know where he is going to alight. And that represents pretty fairly one's situation in reading McDonagh's works, this one as well as others. McDonagh is away ahead of his day, or he is away wrong. Certainly he has not established that he is right, and at the present time his works on venereal diseases cannot be recommended as giving a statement of the present generally accepted knowledge of the subject. Pioneers in the sciences and the arts usually have a hard time gaining acceptance for their views. The reason is, of course, that 999 of a thousand of such pioneers are wrong. Their consolation is the illustrious examples of pioneers who were right, and who were misjudged in their time. Perhaps McDonagh is one of these Galileos.

THE SEX FACTOR IN HUMAN LIFE. A Study Outline for College Men. By T. W. Galloway, Ph.D. Cloth. Pp. 142. New York: The American Social Hygiene Association, 1921.

This handbook was prepared primarily for the use of college men. It is organized on the question and answer system, and is based on a selection of the best textbooks on the subject, together with the results of a conference recently held in New York in which seventy prominent educators participated. Special chapters deal with the general subject of human appetites and their direction, popular misconceptions about sex, and the relation of sex to inheritance, marriage and religion. It is a safe book of information on a most difficult subject.

CLINICAL STUDIES FOR NURSES. A Text-Book for Second and Third Year Pupil Nurses and a Hand-Book for All Who Are Engaged in Caring for the Sick. By Charlotte A. Aikens. Fourth edition. Cloth. Price, $3.25 net. Pp. 577, with 200 illustrations. Philadelphia: W. B. Saunders Company, 1920.

This standard text follows previous lines. Some additions have been made of the changes in medical practice developed by the war, and in the section on infectious diseases as they relate to practice with children. The book is an excellent guide for all who are engaged in caring for the sick.

Medicolegal

Aggravation of Injury by Physician's Mistake or Negligence

(Yarrough v. Hines (Wash.), 192 Pac. R. 886)

The Supreme Court of Washington, in affirming a judgment for $3,250 damages in favor of the plaintiff for personal injuries received while in the employ of the defendant, says that the direct result of his injury was a fracture of the lower end of the fibula. His foot was put in a plaster cast and he was confined to the hospital for several weeks, and at the time of the trial, which was some six months after the injury, there was a shortening of the heel cord, which caused a drawing up of the heel and a consequent dropping of the toes, so as to cause a condition commonly known as "claw-foot," or "toe-drop." The testimony quite conclusively indicated that the condition of the foot was not the necessary result of the injury, but that it might have been caused by improper placement of the foot in the plaster cast, or by some other improper treatment of the original injury. However, it did not make much difference whether the plaintiff's condition was the result of the original injury or that injury in connection with its treatment, for the law unquestionably is that if the injured party in good faith and in the exercise of reasonable care employs a physician to treat his injury and it is aggravated through the mistake or negligence of his physician, such negligence or mistaken treatment of the physician does not become an intervening cause, and that the injured party may recover damages for the injury he has sustained, including the aggravation thereto resulting from the mistaken or improper treatment.

Liability of State for Death from Vaccine

(Sandel v. State (S. C.), 104 S. E. R. 567)

The Supreme Court of South Carolina, in reversing a judgment rendered in favor of the state, says that, by consent of the state, given by an act of the legislature, the plaintiff brought this action for damages for the death of his two children, which he alleged was caused by inoculating them with impure antityphoid vaccine sent out for use by the state board of health. The plaintiff put in evidence a report made by the director of the state laboratory, to the state health officer, of his investigation of the circumstances of the death of the plaintiff's children and two others, following inoculation from the same lot of vaccine. The report stated that unused portions of the vaccine from which the plaintiff's children had been vaccinated were examined, and found to have been contaminated with pus germs. From facts which he stated, the director concluded that some portions of the lot were contaminated in the bottling, from the hands of the person who did the bottling, and that the death of the children was caused by protein poison. The medical experts who testified for the plaintiff and the state differed as to the cause of death. Those who testified for the plaintiff thought that it was caused by the contamination, or, at least, that it might have been so caused; while the experts who testified for the state were of the opinion that death could not have been caused by the presence of pus germs in the vaccine, at any rate, not within the time that elapsed between vaccination and death, which was from nineteen to thirty-six hours. The plaintiff's evidence tended to prove some of his specifications of negligence, while the state's evidence tended to prove due care, and that the methods observed and practiced in the preparation and bottling were the same as those followed in the best laboratories.

There was error in charging the jury that no recovery could be had where there was any intervening cause, in the absence of which the patient would not have died, as the charge ignored some of the essential elements of an intervening cause which would shield the original wrongdoer from liability. The test of intervening causes to defeat recovery is not to be found in the mere fact of their existence or number, but rather in their nature, and the manner in which they affect the continuity of the primary cause, or the connection between it and the injury. If they so affect it that the injury cannot fairly be said to be the natural and probable consequence of the primary cause, they become the proximate or efficient, and the primary becomes the remote, cause. The law does not go back of the last efficient cause. The difference between intervening and concurring causes was apparently overlooked. Suppose the plaintiff's children had some latent weakness, say weak hearts or kidneys, but were strong enough to withstand the reaction from pure vaccine, but too weak to overcome the reaction from contaminated vaccine. While their weakness might, in one sense, be said to have been a concurring cause, in the absence of which death would not have ensued, nevertheless, the state would be liable, provided, of course, the contamination was the result of the negligence of its agents; for, in the case supposed, the negligence complained of was an efficient cause, set in motion by the defendant, and, but for it, the injury would not have occurred.

The jury was charged that the degree of knowledge, skill and care required of a pharmacist, manufacturing chemist, physician or surgeon is that which is ordinarily possessed and exercised by those in their special line of work. There was no error in the instruction, as modified by the statement that it was charged in connection with what had already been charged, when it had been charged that, in all cases, the law requires the exercise of due care, which was defined to mean that amount and degree of care which a person of ordinary reason and prudence would exercise in the circumstances, and that it should be commensurate with the danger involved; that the greater the danger, the greater would be the care required.

The act of the legislature authorizing the bringing of this action was constitutional. It did not create a liability which did not exist before its passage. The liability was one recognized by the common law, but it could not be enforced without the state's consent, on account of the state's immunity from suit.

Society Proceedings

COMING MEETINGS

AMERICAN MEDICAL ASSOCIATION, Boston, June 6-10.

American Association for Thoracic Surgery, Boston, June 6.
American Association of Anesthetists, Boston, June 6-8.
American Climatological and Clinical Association, Lenox, Mass., June 3-4.
American Dermatological Association, Swampscott, Mass., June 2-4.
American Gastro-Enterological Association, Boston, June 4.
American Gynecological Society, Swampscott, Mass., June 2-4.
American Laryngological Association, Atlantic City, May 30-June 1.
American Laryn., Rhinol. and Otol. Society, Atlantic City, June 3-4.
American Medico-Psychological Association, Boston, May 31-June 3.
American Neurological Association, Atlantic City, June 13-15.
American Ophthalmological Society, Swampscott, Mass., June 14-15.
American Orthopedic Association, Boston, June 2-6.
American Otological Society, Atlantic City, June 1-2.
American Pediatric Society, Swampscott, Mass., June 2-4.
American Proctologic Society, Boston, June 3-6.
American Psychopathological Association, Atlantic City, June 11.
American Radium Society, Boston, June 6-7.
American Surgical Association, Toronto, Canada, June 14-16.
American Therapeutic Society, Washington, D. C., June 3-4.
American Urological Association, Montreal, June 2-4.
Association for the Study of Internal Secretions, Boston, June 6.
Association of American Peroral Endoscopists, Atlantic City, June 1.
Conference of State and Provincial Health Authorities, Boston, June 3-4.
Connecticut State Medical Society, Hartford, May 18-19.
Illinois State Medical Society, Springfield, May 17-19.
Interstate Association of Anesthetists, Niagara Falls, June 1-3.
Maine Medical Association, Bangor, June 28-29.
Massachusetts Medical Society, Boston, May 31-June 1.
Michigan State Medical Society, Bay City, May 24-26.
Missouri State Medical Association, St. Joseph, May 24-26.
National Tuberculosis Association, New York, June 13-17.
Nevada State Medical Association, Elko, June 24-25.
New Hampshire Medical Society, Concord, May 25-26.
North Dakota State Medical Association, Fargo, May 26-27.
Oklahoma State Medical Association, McAlester, May 17-19.
Radiological Society of North America, Boston, June 3-4.
Rhode Island Medical Society, Providence, June 2.
South Dakota State Medical Association, Aberdeen, May 24-26.
Southern Minnesota Medical Association, Winona, June 27-28.
West Virginia State Medical Association, Charleston, May 24-26.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

Annals of Surgery, Philadelphia

April, 1921, **73**, No. 4

*Pericardiotomy for Suppurative Pericarditis. E. H. Pool, New York.—p. 393.
*Case of Diaphragmatic Hernia. S. Gitlow and B. Breakstone, New York.—p. 417.
Present Status of Gastric and Duodenal Ulcer. A. O. Wilensky, New York.—p. 420.
*Marginal, Gastrojejunal or Peptic Ulcer Subsequent to Gastro-Enterostomy. J. F. Erdmann, New York.—p. 434.
Gastro-Enterostomy in Acute Perforated Ulcer of Stomach and Duodenum. J. B. Deaver and D. B. Pfeiffer, Philadelphia.—p. 441.
Comparative Results of Pyloroplasty and of Gastro-Enterostomy in Stomach Surgery. B. B. Davis, Omaha.—p. 450.
Drainage of Common Bile Duct Through Cystic Duct: Cystico-Choledochostomy. M. R. Reid, Baltimore.—p. 458.
*Rubber Dam Mikulicz Tampon. C. L. Gibson, New York.—p. 470.
*Gibson-Mikulicz Tampon in Acute Appendicitis. C. E. Farr, New York.—p. 473.
Congenital Valves of Posterior Urethra: Report of Two Cases. A. Randall, Philadelphia.—p. 477.
Krukenberg Tumor of Ovary. P. J. Reel, Columbus, Ohio.—p. 81.
Treatment of Ununited Fractures. M. S. Henderson, Rochester, Minn.—p. 487.
Integral Traction-Providing Splint for Vicious Fractures of Femur. H. C. Masland, Philadelphia.—p. 495.
*Three Frequent Causes of Weak and of Flat Feet. J. T. Rugh, Philadelphia.—p. 499.

Pericardiostomy for Suppurative Pericarditis.—Pool resects portions of the seventh, sixth, and fifth cartilages. He claims that this meets the most important indications, namely, it opens the pericardium at its lowest part; involves little risk of injury to the pleura; provides ample drainage and allows such exploration as is necessary both at the time of operation and during the postoperative course. The procedure was employed in one case, which is reported, and gave quite satisfactory exposure and provided efficient drainage.

Diaphragmatic Hernia.—In spite of a very large diaphragmatic hernia, Gitlow and Breakstone's patient could get about with comparative comfort. She successfully passed through two attacks of what is evidently a respiratory infectious disease, influenza. Her chief complaint was discomfort in the left chest and dyspnea. The authors suggest that this condition may be very common but go unrecognized; hence greater care in diagnosis should be exercised.

Syphilis as Cause of Peptic Ulcer.—A pathologic examination of the area containing a perforated ulcer of the duodenum disclosed evidence of syphilis. Four other excised areas of perforated ulcers of this portion of the intestinal tract were returned, two with syphilitic evidence and two without, making a total of three out of five. Such results, therefore, Erdmann says, force one to include in the list of causations of gastrojejunal, recurring or peptic ulcer, syphilis as a probable strong factor.

Rubber Dam Mikulicz Tampon.—Gibson has modified the Mikulicz tampon by making the outer enveloping layer out of dental rubber dam. A square of rubber dam of suitable size, say 20 by 20 inches in the case of a large retrocecal appendiceal abscess, is folded two or three times in the form of a cornucopia. The apex, which will eventually be the lowest point of the dam, is snipped off, making the hole the size of the little finger. An inch and a half above this the edges of the cornucopia are cut out, making a perforation about one-half inch in size. In some cases a second row of perforations is cut about one inch higher up. The tampon is then introduced as follows: After the appendix has been removed and the cavity sponged out of all purulent material and blood, the operator carries the tampon into the cavity, the index finger being placed at its apex. The pads and retractors are still in place. The edges of the rubber dam are spread out and while the operator still keeps his finger on the apex, the tampon is filled with strips of packing. A large loose dressing is applied. At the end of twenty-four hours the outer dressing is removed. The tampon is usually not disturbed that day, although the gauze packing may be partially withdrawn in order to allow a little better drainage by loosening the dressing. At the end of another forty-eight hours the gauze is all removed. Then one of two things may be done; either the tampon is also removed or it is left in place and a small amount of fresh gauze reintroduced. At the end of seventy-two hours the original tampon should be entirely removed. At this period one of the principal advantages of using the tampon will have been obtained; namely, the permanent pushing back of the abdominal contents from the wound cavity, and there is now left a well-defined, walled-off cavity which can be drained with great ease by inserting a small piece of rubber dam folded on itself two or three times. This piece of rubber dam is generally removed in the course of a day or two.

Gibson-Mikulicz Tampon in Appendicitis.—Farr is convinced that the Gibson tampon lessens mortality in the very severe type of cases. It also lessens morbidity and suffering and the number of postoperative hernias is no greater than in other forms of treatment; the hospital stay is no longer; the conditions of the wound and the intraperitoneal conditions are better than by any other form of drainage.

Causes of Weak and Flat Feet.—The first of these causes mentioned by Rugh is a shortened Achilles tendon. The second condition that mechanically predisposes to a weak or flatfoot is a hypertrophy of the inner end of the scaphoid bone. The third factor found frequently, especially in cases of congenitally weak and in flat feet, is a supernumerary tarsal bone placed at the inner side of the scaphoid and over which runs the tendon of the tibialis posticus. This bone is called the tibiale externum and by some has been called a sesamoid in the posterior tibial tendon.

Journal of Biological Chemistry, Baltimore

April, 1921, **46**, No. 2

Metabolism of Eunuch. B. E. Read, Pekin, China.—p. 281.
Determination of Inorganic Phosphate in Urine by Alkalimetric Titration. C. H. Fiske, Boston.—p. 285.
Formation of Hydrocyanic Acid in Plants. P. Menaul, Stillwater, Okla.—p. 297.
Colorimetric Method for Determining Hydrogen Ion Concentration of Small Amounts of Fluid. L. D. Felton, Baltimore.—p. 299.
Preparation of Galactonic Lactone. P. A. Levene and G. M. Meyer, New York.—p. 307.
*Antiscorbutic Potency of Milk Powders. E. B. Hart, H. Steenbock and N. R. Ellis, Madison, Wis.—p. 309.
Relation of Lactic Acid Bacteria to Corn Silage. E. B. Fred, W. H. Peterson and J. A. Anderson, Madison, Wis.—p. 329.
Destruction of Pentosans in Formation of Silage. W. H. Peterson, E. B. Fred and J. H. Verhulst, Malison, Wis.—p. 329.
*Clinical Method for Quantitative Determination of Potassium in Small Amounts of Serum. B. Kramer and F. F. Tisdall, Baltimore.—p. 339.
Modification of Van Slyke Method of Protein Analysis. P. Menaul, Stillwater, Okla.—p. 351.
Lecithin of Brain. P. A. Levene and I. P. Rolf, New York.—p. 353.
*Stability of Antiscorbutic Vitamin and Its Behavior to Various Treatments. N. R. Ellis, H. Steenbock and E. B. Hart, Madison, Wis.—p. 367.
Blood Sugar Regulation and Origin of Hyperglycemias. I. Glycogen Formation and Glycogenolysis. E. Langfeldt, Christiania, Norway.—p. 381.
Id. II. Conditions of Action of Liver Diastases. E. Langfeldt, Christiania, Norway.—p. 391.
Id. III. Theory. E. Langfeldt, Christiania, Norway.—p. 403.
Blood as a Physicochemical System. L. J. Henderson, Cambridge, Mass.—p. 411.

Antiscorbutic Potency of Milk Powders.—Milk powders made by the Merrell-Soule process, the California Central Creameries spray process and the Just process, were tested by Hart and others as to their antiscorbutic value. They found that aside from the factor of the initial quantity of this vitamin in the milk as influenced by feed, the powders vary in their potency with the process used in their manufacture, the spray processes of manufacture being more destructive of the antiscorbutic vitamin than the Just process. These results should in no way condemn the milk powders made by spray processes. They only point out their limitations when used as the sole source of nutrients in infant feeding. Probably with all milk powders, irrespective of method of manufacture, the safest procedure in a restricted dietary, particularly in infant feeding, is to supplement them with some potent source of the antiscorbutic vitamin. A possible exception to this statement would apply to the powders made by the Just proc-

ess from summer-produced milks or even winter-produced milks where the cow's ration is made rich in the antiscorbutic vitamin by the proper selection of roots and tubers.

Quantitative Determination of Potassium in Blood Serum.—With the method described by Kramer and Tisdall the potassium is precipitated in undiluted serum by adding an excess of a sodium cobalti-nitrite reagent. This reagent precipitates all the potassium while the proteins remain in solution. The precipitate is centrifuged and washed repeatedly with water and then titrated as in the original method proposed by Kramer. The results obtained on serum are accurate to within 5 per cent. of the amount of potassium actually present. The potassium content of the serum of both normal children and adults is singularly constant, the maximum variation being from 18 to 21 mg. per 100 c.c.

Stability of Antiscorbutic Vitamin.—While desiccation of cabbage in an atmosphere of carbon dioxid for thirty-five hours at 65 C. did not prevent the destruction of the antiscorbutic vitamin, fermentation processes involved in the making of sauerkraut from cabbage and silage from corn resulted in a destruction of the antiscorbutic factor. What part heat played in this destruction is as yet undetermined. This vitamin was not removed from orange juice by either ether or by aeration. Oxidizing agents such as hydrogen peroxid and potassium permanganate caused its destruction, while the mild reducing action of molecular hydrogen was without effect. Blood charcoal and the Chamberlain filter removed a measurable amount of this vitamin from orange juice.

Journal of Experimental Medicine, Baltimore

April 1, 1921, **33**, No. 4

*Studies on Lymphoid Activity. V. Relation Between Time and Extent of Lymphoid Stimulation Induced by Physical Agents and Degree of Resistance to Cancer in Mice. J. B. Murphy, W. Nakahara and E. Sturm, New York.—p. 423.

*Studies on Roentgen-Ray Effects. VII. Effect of Small Doses of Roentgen Rays of Low Penetration on Resistance of Mice to Transplanted Cancer. W. Nakahara and J. B. Murphy, New York.—p. 429.

*Id. VIII. Influence of Cancer Inoculation on Lymphoid Stimulation Induced by Small Doses of Roentgen Rays. W. Nakahara and J. B. Murphy, New York.—p. 433.

Etiologic Relation of Bacillus Actinoides to Bronchopneumonia in Calves. T. Smith, Princeton, N. J.—p. 441.

*Precipitin Response in Blood of Rabbits Following Subarachnoid Injections of Horse Serum. H. L. Alexander, New York.—p. 471.

Granules in Cells of Chick Embryos Produced by Egg Albumin in Medium of Tissue Cultures. M. R. Lewis, Baltimore.—p. 485.

*Experimental Syphilis in Rabbit. VI. Affections of Bone, Cartilage, Tendons and Synovial Membranes. Part 1. Lesions of Skeletal System. W. H. Brown, L. Pearce and W. D. Witherbee, New York.—p. 495.

Id. Part 2. Clinical Aspects of Syphilis of Skeletal System. Affections of Facial and Cranial Bones and Bones of Forearm. W. H. Brown, L. Pearce and W. D. Witherbee, New York.—p. 515.

Id. Part 3. Syphilis of Posterior Extremities with Other Affections of a Miscellaneous Type. W. H. Brown, L. Pearce and W. D. Witherbee, New York.—p. 525.

New Strain of Transmissible Leukemia in Fowls (Strain H). V. Ellermann, Copenhagen, Denmark.—p. 539.

Lymphoid Stimulation Increases Resistance to Cancer.—It has been shown that resistance to transplanted cancer follows stimulation of the lymphoid tissue when the stimulation is induced by either heat or small doses of roentgen rays. In this paper Murphy and others report on attempts to determine whether the degree of immunity had a quantitative relation to the amount of the stimulation. All the results together are taken to indicate that the degree of immunity is dependent on the amount of lymphoid stimulation existing either at the time of or following soon after the cancer inoculation.

Effect of Roentgen Ray on Resistance to Cancer.—The experiments reported on by Nakahara and Murphy show conclusively that roentgtn rays given in a dose sufficient to stimulate the lymphoid tissues, increase the resistance of mice to a transplanted cancer. As the degree of stimulation induced by this agent is less than that induced by exposure to intense dry heat or that following the injection of homologous living tissue, it is not surprising that the degree of resistance is less than that seen after the employment of the latter two methods.

Id.—Changes in the blood of mice roentgenized and inoculated with cancer seven days afterward show that the state of resistance to cancer inoculation is attended by blood lymphocytosis, as is the case in all other varieties of immunity to transplanted cancer so far studied.

Effect of Horse Serum on Precipitin Response.—Normal horse serum, without preservative, was injected by Alexander into the subarachnoid space of rabbits by introducing a No. 24 Luer needle attached to a glass syringe, through a sterile field just below the occipital ridge in the midline. The needle was carried forward and slightly downward until it punctured the occipito-atlantoid ligament. A yield of from 0.5 to 1 c.c. of cerebrospinal fluid was thus readily obtained. The needle was left in place, the syringe disconnected, and a second syringe with the correct amount of serum was attached. After slightly withdrawing the plunger to prevent any chance puncture of a vessel the serum was slowly injected. Precipitin tests were made by mixing 0.3 c.c. of rabbit serum with 0.3 c.c. of normal horse serum (for unchanged horse serum, equal parts of an antihorse rabbit serum with dilutions of the serum or cerebrospinal fluid to be tested). After incubation at 37 C. for one hour in a water bath the tubes were placed in the ice chest over night and readings were made the following morning. As controls, normal rabbit serum and normal sheep serum were used. Rabbits which received a single dose of normal horse serum produced precipitins in the blood in greater abundance, of higher titer, and persisting longer than those in control rabbits which received a similar injection intravenously. Repeated subarachnoid injections of normal horse serum induce precipitins in the blood early. They may appear a few days afterward and reach a high titer. No anaphylactic manifestations occurred in rabbits treated repeatedly with subarachnoid injections of normal horse serum when the precipitin content of the blood was high. Anaphylactins, as determined by passive transfer of anaphylaxis, were demonstrated in serums with high precipitin content. Alexander feels that these experiments may explain clinical evidences of anaphylaxis observed when an initial intravenous injection of horse serum followed a series of intraspinal injections of such serum.

Experimental Syphilis.—From a study of a series of rabbits inoculated with two old strains of *Spirochaeta pallida*, it was found by Brown and others that localized infection of bones and tendons was of frequent occurrence and led to the formation of a variety of lesions. The bones usually involved were those of the face and the feet and legs. Most often the lesions arose from the periosteum, but they developed also within the bone or the marrow cavities and at the lines of epiphyseal union.

Southern Medical Journal, Birmingham, Ala.

April, 1921, **14**, No. 4

Sprue: Its Prevalence in South. S. K. Simon, New Orleans.—p. 255.

*Differential Diagnosis of Hematemesis: Report of Case. W. Rowland, Jr., Oxford, Miss.—p. 260.

Sclaret Fever and Streptococcic Sore Throat: Epidemiologic Discussion. A. J. Waring, Savannah, Ga.—p. 265.

Reporting of Morbidity Statistics with Special Reference to Malaria Fever. W. S. Leathers, Jackson, Miss.—p. 269.

Standard Treatment for Malaria. C. C. Bass, New Orleans.—p. 280.

Destruction of Anopheles in Screened Dwellings. D. L. Van Dine, Washington, D. C.—p. 289.

Cooperative Antimalaria Campaigns in United States in 1920. J. A. LePrince, Memphis, Tenn.—p. 297.

Postoperative Thrombophlebitis. F. K. Boland, Atlanta, Ga.—p. 307.

Transplantation of Cartilage. W. T. Coughlin, St. Louis.—p. 311.

Importance of Early Diagnosis in Acute Abdominal Conditions. J. L. Ransohoff, Cincinnati.—p. 313.

*Apoplexy of Placenta. M. P. Rucker, Richmond, Va.—p. 318.

Functional Examination of Ear. J. D. Heitger, Louisville, Ky.—p. 326.

Intubation Versus Tracheotomy in Laryngeal Diphtheria. J. H. Foster, Houston, Texas.—p. 332.

Differential Diagnosis of Hematemesis.—Rowland cites the case of a man who presented a typical history of gastric ulcer with hemorrhage but the condition had not been recognized previously. The appendix had been removed for a supposed appendicitis and pulmonary tuberculosis had been suggested. All of the classical symptoms and signs descriptive of peptic ulcer were practically without a single exception unmistakably present. Additional evidence was added by a series of roentgenograms, which showed a marked hypomotility of the stomach, the forty-eight hour film showing a large amount of the barium meal still remaining in the stomach.

Apoplexy of Placenta.—Six cases are reported by Rucker in which there were large red infarcts of the placenta. These patients presented a symptomatology definite enough for the condition to be recognized clinically: marked albuminuria with a few casts; a sudden rise in blood pressure; edema of the feet and face; no subjective symptoms; premature labor with antepartum hemorrhage; still-born infant; a large red infarct occupying two thirds of the placenta. The most characteristic sign was a symptomless and rather sudden rise in blood pressure that resisted all treatment. This was associated with albuminuria in three instances. In two cases the urine remained practically free from albumin throughout pregnancy, and in one case no urine examination was made. Edema was noted in two instances. Next to the rise in blood pressure, the most characteristic thing was the absence of subjective symptoms. Headache, disturbances of vision, nausea and epigastric pain, were rarely noted, and when present were very transitory. The association of large white and red infarcts in the same placenta, the presence of necrotic areas in the center of many of the infarcts, and finally the presence of clotted blood in many of these infarcts with signs of premature separation of the placenta Rucker says suggests that this may be the sequence of events in certain cases of ablatio placentae.

Surgery, Gynecology and Obstetrics, Chicago

April, 1921, **32**, No. 4

*Treatment of Bilharziasis of Bladder; Report of Case with Permanent Cure. D. Petillo, New York.—p. 287.
*Habitual or Recurrent Dislocation of Shoulder. T. T. Thomas, Philadelphia.—p. 291.
Perineal Operation for Removal of Stone in Lower End of Male Ureter. O. S. Lowsley, New York.—p. 300.
*Tissue Resistance in Malignant Disease. W. Boyd, Winnipeg, Manitoba.—p. 306.
Reconstruction Surgery and Its Application to Civilian Practice. C. L. Starr, Toronto, Can.—p. 311.
*Vesicosigmoidal Fistulae. G. D. Sutton, Rochester, Minn.—p. 318.
*Acidosis in Operative Surgery; Occurrence During Operation and Its Treatment by Glucose and Gum Acacia Given Intravenously. L. K. P. Farrar, New York.—p. 328.
Superfetation or Superfecundation? H. E. Radasch, Philadelphia.—p. 339.
*Breast Infections. J. L. Baer and R. A. Reis, Chicago.—p. 353.
Perineorrhaphy for Complete Laceration. T. J. Watkins, Chicago.—p. 360.
Scoliosis. S. Kleinberg, New York.—p. 364.
Purulent Pericarditis: Closed Suction Technic for Drainage; Report of Case. W. Whittemore, Boston.—p. 371.

Treatment of Bilharziasis of Bladder.—Inasmuch as Petillo's patient refused to enter the hospital, he decided to modify the Christoferson method by injecting intravenously only a constant dose of one-half grain of antimony tartrate diluted in 10 c.c. of fresh physiologic sodium chlorid solution. In addition, he prescribed a small dose of sodium phosphate to be taken every night at retiring and recommended the patient a purin-free diet. Nine days after beginning treatment the patient had to leave town for a week, therefore, a cumulative dose of 4.5 grains of the medicine was injected. At this date examination of centrifugated sediment of urine still showed living ova of bilharzia. Eleven days later a second series of injections was inaugurated and continued without any interruption for two months thus reaching a total dose of 40 grains. During the intravenous treatment of antimony, occasional irrigations of the bladder were practiced either with 1:3,000 solution of silver nitrate or with 2 per cent. mercurochrome. No bilharzia were found after the last injection made about three months after the first. A cystourethroscopic examination showed an almost normal bladder. A noteworthy circumstance in this case is the fact the patient's wife remains entirely immune from bilharzia. This would corroborate the assumption that for the transmission of the infection from one to another subject a third medium is necessary.

Habitual Dislocation of Shoulder.—Of twenty-four shoulders in nonepileptics, in all of which only the capsule operation was performed by Thomas, in eighteen there have been no dislocations since the operation, done in the most recent case three months ago and in the first nearly thirteen years ago. Four more cases, in which only one operation was performed, may fairly be classed as cures, making twenty-two successful results from the capsule operation. Two cases have been failures, one after two operations and one after one operation. Of eighteen shoulders in epileptics the capsule operation was done in all but one in which only a high excision was performed without any further dislocation. In eleven cases one capsule operation in each was completely successful after four years in the most recent case and eleven and a half years in the first. Of the remaining six cases, one was successful from reshaping the glenoid cup after a failure by one capsule operation, and one was successful from a high excision after three capsule operations had failed. This operation, in Thomas' opinion, will stop the dislocations in any case but impairs the joint function considerably. Two recent cases show encouraging results after the second capsule operation. Two cases are classed as failures, one after two capsule operations and one after one capsule operation had been performed.

Tissue Resistance in Malignant Disease.—That a partial immunity against malignant disease may exist, Boyd thinks, is shown by three cases he describes. It is possible for the patient to remain in a condition of apparently absolute health while metastases are being formed in a widespread manner throughout the body, very much as if nonpathogenic bacteria established themselves in foci here and there without affecting the general health. Not only may the metastases be held in check, as it were, by the defensive forces of the body, but they actually may recede and disappear. There can be no explanation for such behavior as long as our ignorance of the essential nature of neoplasms is so profound. At the same time, it is more than probable that, in some instances, at least, the behavior of the metastases is governed and controlled to some extent by the primary growth. Thus it is a recognized fact that remoal of the primary tumor in chorioepithelioma may be followed in exceptional cases by disappearance of the secondary growths in the lung. The fat of a metastasis depends not only on the proliferative activity of the tumor cells, but also on the behavior of the tissue in which they are implanted.

Vesicosigmoidal Fistula.—A review of thirty-four cases of vesicosigmoidal fistula in which operation was performed demonstrated a great preponderance of the type due to inflammation and infection in contradistinction to the fistulae due to malignant conditions, the ratio being 14.50:1, and to those of traumatic origin, the ratio being 9.66:1. The etiologic infection was in organs adjacent to the bladder, such as the appendix, the sigmoid, the rectum, and, most often, the fallopian tubes (38.23 per cent.). Only six cases were due to diverticulitis of the sigmoid. Three other patients had vesicoenteric fistulas and gave histories simulating sigmoidal diverticulitis, yet the true etiology remained obscure. Twenty-three of the thirty-four patients were cured by operation, the condition of six was improved, six had recurrences, and two of these had definite recurrences of symptoms as severe as they were originally. One of these patients was cured at the second operation, and the other improved but died of influenza. There were four postoperative deaths, a mortality of 11.76 per cent. In eleven cases the vesical fistula was cured but a fecal fistula remained. In five the drainage gradually stopped in from fifteen days to three years and three months; in one, cure was affected by a second operation; and in two, the fistula gradually healed. After free drainage has been established, a proper radical dissection with the removal, in so far as is advisable, of all diseased tissue has been done; if the approximation is made with difficulty the sigmoid is closed over a large rectal tube. Sutton considers these results as being gratifying even though there may be a gradually diminishing fecal fistula for a relatively short time. All the patients with vesicosigmoidal fistulas of tuberculous origin on whom he operated were cured.

Use of Glucose to Prevent Acidosis Following Operation.—Farrar holds that a solution of glucose given intravenously during an operation at the rate of 0.8 gm. glucose for every kilogram of body weight each hour of the operation will lessen the acidosis incident to operation by promoting metabolism, prevent or diminish the vomiting, and promote diuresis. A solution of gum acacia (6 per cent.) in glucose (20 per cent.) if given at a subtolerant rate the entire time of opera-

tion is an aid to the maintenance of blood pressure. Carbohydrate feeding before and after the operation, together with the use of sodium bicarbonate, will do much to prevent or lessen acidosis. Farrar suggests that every well equipped hospital laboratory should have a paid physiologist who could devote his time to the study of problems on the living tissue as the pathologist does on the specimens removed. The study should cover organic regulation as a whole and not individual cells or tissues. Biology would not then be divided into its branches but would comprise a study not only of anatomy and pathology but physiology and biologic pharmacology as well. The problems should be of practical import, of like value to patient and surgeon. The student should have made known to him the facts of general metabolism and their relation and importance to surgery. This information should not be isolated and scattered but grouped and given as a part of student work preparatory to surgical training.

Breast Infections Due to Influenza.—Baer and Reis point out that the influenza epidemics of 1918-1919 were largely responsible for the increase in breast infections following them, in the Michael Reese Maternity. The technic employed in the Michael Reese Maternity conforms closely to that used in most of the clinics analyzed. These procedures were not varied during the periods of increased incidence of infection. This tends to confirm the view that the increase was in relation to the influenza waves. The authors believe it would be advantageous for the largest possible number of clinics to adopt a uniform procedure for the prophylactic treatment of pathologic nipples, breast lymphangitis, and threatened abscess, preferably that favored by the largest group in each case.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Children's Diseases, London

January-March, 1921, **18**, Nos. 205-207

Malaria in Children at Smyrna. S. Veras.—p. 1.
Celiac and Allied Types of Infantilism. R. Miller.—p. 11.
*Mongolism. H. Thursfield.—p. 18.
Case of Hemihypertrophy. E. G. Hall.—p. 21.
Nature of Plantar Reflex in Early Life and Causes of Its Variations. W. M. Feldman.—p. 24.
Case of Esophagectasia in a Child. D. H. Paterson.—p. 27.
Hydatid Disease of Liver in a Child. E. E. Hughes.—p. 29.

Mongolism.—Forty-two Mongol children examined by Thursfield failed to corroborate the statement that the Mongol is apt to be the last born child of a long family. Of the forty-two cases five were first, and eleven were second children, three were third, and seven were fourth, so that two thirds of the whole number were certainly not members of an unduly long family. Of the remaining fourteen one was a fifth child, three were sixth, three seven, three eight, three ninth, and one was the tenth. Nor, again, are they by any means the last children. In seven instances children have been born since the advent of the Mongol: respectively a third, a fourth, two fifths, an eighth, a ninth and a tenth, all quite healthy children. A current statement on this point is that the mother of the Mongol is near the end of the child-bearing period. Of the mothers in this series the average age was 36 years, but if the mothers of more than four children are excluded the average age sinks to between 33 and 34 years—an age which is certainly within the child-bearing period. Among the mothers of Mongols were apparently healthy young women of 23, 25 and 27 years. Among these forty-two mothers were nineteen who had miscarried at some time in their pregnancies, many of them more than once. On the other hand there were seventeen with more than one pregnancy who had not had a miscarriage. There is no evidence to connect the advent of the Mongol with any obvious defect of health during the months of pregnancy. Nor does there appear to be any evidence of the influence of syphilis or tuberculosis. In no instance in this series was there any obvious taint of either of these diseases; and in the few cases where a Wassermann reaction was used for a test the result was negative. An obvious cardiac defect was noted in seven of the forty-two, six were not noted, and of the remaining twenty-nine it is definitely stated that there was no physical sign of a cardiac lesion, but in two of these attacks of "blueness" were stated to occur. Nystagmus was noted in four cases, double congenital cataract in one, an accessory auricle in front of the ear in one, and in one webbed toes, the second and third toes on either foot being joined together. The well known incurving of the last phalanx of the little fingers was noted as present in thirteen patients, absent in sixteen, and not noted in thirteen.

British Medical Journal, London

April 9, 1921, No. 3145

Orthopedic Treatment of Poliomyelitis. H. A. T. Fairbank.—p. 517.
Mitral Stenosis, Auricular Fibrillation and Action of Digitalis. C. H. Cattle.—p. 521.
*Treatment of Sciatica by Galvanic Acupuncture. E. A. Goulden. p. 523.
Light Metal Limbs in Above-Knee Amputations. E. M. Corner.—p. 524.
*Pressure in Renal, Portal and Glomerular Capillaries of Frog's Kidney. L. Hill.—p. 526.
*Case of Complete Pneumothorax in an Infant, Due to Pulmonary Tuberculosis. G. Bourne.—p. 526.
Melena Neonatorum Treated by Blood Transfusion. R. D. Laurie. —p. 527.
Diphtheria and Follicular Tonsillitis. W. H. Palmer.—p. 527.
Bradycardia. H. C. Woodhouse and F. C. Jones.—p. 527.
Treatment of Local Leishmaniasis. G. F. Mitchell.—p. 528.

Galvanic Acupuncture in Sciatica.—The aim of all the various forms of treatment devised for sciatica is to induce hyperemia of the nerve. Goulden claims that by acupuncture the hyperemia occurs just where it is required, and it can be given in definite doses varying according to the response of the nerve. Again, when an electric current is passed through the tissues, sodium hydrate is formed at the negative electrode, which in this case is the needle passed down to the tender spot on the nerve. This sodium hydrate has a caustic action on the tissues. In acupuncture only a small amount of current is used (from 3 to 6 ma.). The effect of ionic movement in the tissues is involved also. From one or all of the above effects it is maintained by Goulden that by this treatment there is complete relief of pain, but the wasting of muscles with weakness of limb and lameness requires appropriate treatment. Electrical acupuncture, carried out according to instructions, is harmless. It must not, of course, be used recklessly with any strength of current, nor must the needle be plunged into any part of the body without consideration of the underlying parts.

Pressure in Kidney Capillaries.—By making an incision through the skin and abdominal wall in the lumbar region of a urethanized frog and removing the ileum on the same side Hill exposes the kidney. The cautery is used to stop all hemorrhage. A ligature is tied around the membrane attached to the outer edge of the kidney. By very gentle traction, the kidney is then drawn on to the transparent peritoneal membrane which covers a small brass chamber with a glass floor, similar to that used by Roy and Graham Brown in their measurement of capillary pressure in the frog's web. A glass cover is then brought down on to the upper surface of the kidney so that it can be squeezed between the membrane and glass cover when air is blown into the chamber. A water manometer indicates the pressure used for compression. The kidney is examined under the microscope, using a magnification of 100 times. The kidney appears closely covered with a network of branches of the renal portal vein, through which blood flows slowly in copious streams. On compressing with a pressure of about 2 cm. of water these vessels are squeezed empty, and the tubules and, in successful preparations, the glomeruli then come into view; the arterial blood is seen rapidly circulating through the glomeruli. The Bowman capsules can be seen surrounding some of the glomeruli, and the glomeruli hanging in a clear space within these. In some glomeruli the afferent and efferent vessels are clearly seen, and the blood corpuscles can be watched racing through the afferent vessel, whirling round the twisted capillaries of the glomerulus and out through the efferent vessel. On the inner edge in one preparation a row of glomeruli were seen fed by the branches of one of the renal arteries.

Complete Left Pneumothorax in Young Child.—Bourne's patient, a boy, aged 18 months, had cyanosis, cough and

dyspnea he had been in his usual health until three months before, when he contracted measles. Since then he had been in poor health, the chief symptoms being lack of appetite, constipation, wasting, and cough. A condition of complete pneumothorax of the left side, associated with bronchopneumonia of the right lung, was diagnosed. The child died. Cyanosis was extreme; the nails of the hands and feet were light blue in color. Hypostasis was well marked. The left lung was collapsed down on its root, except at the apex, where it remained adherent to the parietal pleura. The left parietal pleura was studded with miliary tubercles; none were seen on the right side. The left lung was a solid mass of yellow tubercles. It sank in water. At the apex, where it was adherent to the pleura, a cavity the size of a hazel nut was present. The right lung contained many miliary tubercles. The glands at the hilum of both lungs were slightly enlarged, hyperemic, but definitely not caseous anywhere.

Journal of Laryngology and Otology, London

April, 1921, **36**, No. 4

Cavernous Sinus Thrombosis. T. R. Rodgers.—p. 169.
Death After Tonsillectomy. T. B. Layton.—p. 177.
Foreign Body in Esophagus Removed by External Esophagotomy. Cure. J. N. Roy.—p. 183.
Infection of Middle Ear and External Auditory Meatus from Vincent's Organisms. J. Adam.—p. 186.
Tonsil as Focus of Infection. W. M. Mollison.—p. 188.

Lancet, London

April 9, 1921, **1**, No. 5093

Colonial Medical Service as a Career. J. K. Fowler.—p. 729.
When to Open Mastoid Antrum in Acute Ear Disease. T. B. Layton.—p. 734.
*Toxemic Stage of Diphtheria. M. E. Harding.—p. 737.
*Prophylaxis of Typhus Fever. J. M. Mitchell and G. P. N. Richardson.—p. 742.
*Fatal Case of Celiac Infantilism. R. Miller.—p. 743.
Recurrent Hernia: Operations for Its Cure. A. W. Sheen.—p. 746.

Toxemic Stage of Diphtheria.—During the first week or ten days of an attack of diphtheria of the most severe type the patient shows certain clinical and pathological signs which differ from those of the second stage of the disease, a stage dominated by cardiac (or possibly tissue) degeneration. These phenomena are dependent on an overwhelming toxemia. Harding has therefore, called it the toxemic stage of the disease. It gradually merges into the second stage, that of cardiac weakness. Experiments made by Harding indicate that treatment must consist in increasing the fluid in effective circulation and at the same time, if possible, in diluting the blood so as to reduce its concentration and viscosity. Various solutions were tried. It was found that by increasing the blood volume, and at the same time reducing the concentration of the blood, the circulation could be improved, but that the effect was only transitory as the fluid was rapidly lost from the vessels with a return to the previous high concentration of the blood. It was therefore concluded that physiologic sodium chlorid would not give any increased survival rate after a heavy dose of toxin. There were no more survivals in the groups treated with hypertonic saline or gum saline, together with antitoxin, than in the control group treated with antitoxin alone. A certain number of animals which otherwise would certainly have died recovered as a result of the intravenous injections of citrated blood in addition to antitoxin treatment. It is safe to conclude that in clinical diphtheria treatment along these lines will probably reduce the risk of death—i. e., will increase the chance of survival, and by safeguarding the suprarenals will shorten the illness and lighten its severity. If blood transfusions served merely to protect the suprarenals the indication for their use in all very severe cases would be strong.

Prophylaxis of Typhus.—Although the results obtained by Mitchell and Richardson are suggestive, they do not claim that the prophylaxis of typhus by inoculation has yet been placed on a firm basis. Further observations on a more extensive scale are necessary. Apart from the general prophylactic measures indicated above some trial was made of the specific prophylaxis of the disease by inoculation and encouraging results were obtained. The vaccine used in South Russia during the winters 1918-1919 and 1919-1920 consisted essentially of sterile typhus blood free from fibrin. Three doses of the vaccine were given in the arm subcutaneously or intermuscularly at intervals of from five to seven days, the amounts being 1 c.cm., 2 c.cm., 2 c.cm. No general reaction was observed. Of 195 persons who were inoculated in this way only one subsequently developed typhus.

Celiac Infantilism.—Details are given by Miller of a fatal case of celiac infantilism in which postmortem examination failed to show any chronic changes in the pancreas, liver, intestine, or elsewhere to account for the prolonged failure in fat digestion. The necropsies hitherto recorded in cases of at all a similar nature are discussed; and it is argued that the intestinal changes found in them do not prove that the excessive fat loss in celiac disease is due to an enteritis. It is concluded that celiac disease is independent of organic changes and thus must be due to a digestive fault (probably a defective action of the bile on fat absorption).

South African Medical Record, Cape Town

March 12, 1921, **19**, No. 5

*Psoriasis in South Africa. C. Pijper, Johannesburg.

Psoriasis in South Africa.—A questionnaire sent out by Pijper disclosed the fact that in those parts of South Africa where the altitude is less than 4,000 feet psoriasis seems to be very irregularly distributed; it appears to be rare in the parts where the altitude is more than 4,000 feet. A rather high percentage of cases are complicated by asthma. The consensus of opinion in South Africa is that psoriasis is decidedly rare among the non-European sections of the population. This agrees with the views laid down in the literature on the subject, Castellani alone being of a different opinion.

Annales de Médecine, Paris

January, 1921, **9**, No. 1

*Encephalomyelitis of Malarial Origin. G. Marinesco.—p. 1.
The Mental Disturbances and Somnolency in Epidemic Encephalitis. E. Gelma and A. Hanns.—p. 17.
*Artificial Plus Spontaneous Pneumothorax. R. Burnand.—p. 22.
*Neurology in the United States. J. Lhermitte.—p. 34.
Experimental Cancer. G. Roussy and M. Wolf.—p. 51. Cont'd.

Malarial Myoclonic Encephalitis.—In Marinesco's case the myoclonus involved most of the muscles of the extremities, trunk, and abdomen. The young woman died twenty-five days after the first symptoms, which had suggested epidemic encephalitis. The malarial parasite in the blood corrected the diagnosis, and necropsy showed the parasites located exclusively in the nerve centers.

Spontaneous Pneumothorax Complicating Artificial Pneumothorax.—Burnand writes from Leysin to describe several cases which show the irreparable nature of an extensive opening between the pleura and lung. In four of his nine cases the spontaneous pneumothorax had existed before and had developed anew in the course of the therapeutic pneumothorax. Expectoration of pus and the anomalous behavior of the manometer warned of this complication. Three of the nine patients succumbed to the effects in the first month and four in from three to six months. Forlanini's eight patients all died. The only recourse, if the pus keeps forming, is to open the pleura and drain, but this is only palliative. A favorable evolution is extremely rare.

Neurology in the United States.—Lhermitte describes the progress in medical and surgical treatment in nervous disease in this country, especially Harvey Cushing's school of neurologic surgery. He emphasizes the value of the cooperation of the neurologist and the surgeon, profiting by recent progress in physiology.

Bulletin Médical, Paris

April 2, 1921, **35**, No. 14

*Insufficiency of Left Ventricle. L. Gallavardin.—p. 279.

Insufficiency of the Left Ventricle in Valvular Disease.—Gallavardin describes three cases of chronic endocarditis with perfect compensation until the age of 42 to 55. Then the patients suddenly developed acute insufficiency of the left ventricle. Necropsy in one case confirmed the endocardial

valvular disease. In the second case compensation was restored by digitalis after six months of disturbances, including nocturnal pulmonary edema and dyspnea on exertion. The benefit from the digitalis has persisted for a year to date.

Journal de Chirurgie, Paris

April, 1921, **17**, No. 4

*Bone-Periosteum Transplants. H. Delagénière.—p. 305.
*Cinematization of Amputation Stumps. G. Bosch Arana.—p. 325.

Osteoperiosteal Transplants.—Delagénière describes his technic for an implant to promote regeneration of bone. It is not a graft, but merely supplies the elements indispensable for formation of bone. He declares that, contrary to what Albee says, it is possible to reconstruct any part of the skeleton and cure any pseudarthrosis, and obtain the desired results in a simple, effectual and more certain manner than with Albee's grafts. He obtained excellent and complete results in 244 of his 273 cases of the kind. The graft should be about as thick as a 50 centime piece, and should consist of the periosteum, lined throughout with a thin layer of bone. The bone strengthens the graft, holds the periosteum stretched, and keeps it in good shape to facilitate the reconstruction of the bone. A tibia can furnish about 22 cm. of such grafts. His illustrations show how he rolls up the rectangular graft on the periosteum side to insure the proper curve to fit it in its new bed. The bone-periosteum strips are implanted side by side, end to end, or overlapping, the bone side toward the bone bed. The edges are slipped under the periosteum all around. When an angular space is to be filled, he ties two sheets together at an angle. The flaps are kept in place usually by suturing the soft parts over them. Operations on jaw, nose, skull and shoulder are illustrated.

Cinematization of Amputation Stumps.—Bosch Arana's method has been previously described in The Journal. He makes four longitudinal incisions on the stump at equal distances apart, and resects the bone and some of the muscles to make the stump smaller. He then mobilizes the skin and draws it through from one incision to the opposite one, suturing the skin together on each side and thus making a skin-lined tunnel. The oblong spaces left at the incision on the other sides of the stump, where the skin has been drawn away to line the tunnel, soon heal over. He gives a number of illustrations of his technic and the way in which the muscles can voluntarily control the prosthesis.

Lyon Chirurgical, Lyons

January-February, 1921, **18**, No. 1

*Excision of Subclavian Aneurysm. W. S. Halsted.—p. 1.
*Coxa Plana. H. Waldenström.—p. 7.
*Appendicular Symptoms in Dysentery. P. Bonnet and L. Michon.—p. 14.
*Meninges After Spinal Anesthesia. P. Santy and L. Langeron.—p. 22.
*Nature of Trophic Ulceration. R. Leriche.—p. 31.
Capillary Vasomotor Phenomena. A. Policard.—p. 51.

Excision of Subclavian Aneurysm.—Summarized in The Journal, Aug. 28, 1920, p. 633, when published elsewhere.

Coxa Plana.—Summarized in The Journal, July 10, 1920, p. 141.

Appendicular Syndrome in Chronic Amebic Dysentery.—Bonnet and Michon report a case of gangrenous perforation of the cecum close to the appendix which proved to be the work of latent amebic dysentery. The surface of the parietal peritoneum looked as if it had been washed, and the pus was pale and milky. Symptoms suggesting appendicitis are often the precursor of an exacerbation of latent dysentery. When there is a history of dysentery, even after a silent interval of years, the stools should be examined for the ameba before accepting the diagnosis of appendicitis.

The Sequelae of Intraspinal Anesthesia.—Santy and Langeron describe cases which show that disturbances may follow, ranging from simple headache to aseptic puriform meningitis after intraspinal anesthesia. The disturbance is essentially congestion with resulting exudation, as from any toxic action on the meninges.

Trophic Ulceration After Section of a Nerve.—Leriche concludes from his fifty-eight cases of severing of the sciatic nerve and seventeen cases of operations for trophic ulcers, that the latter is the result of the vasomotor disturbance from proliferation of the fibers of the upper stump in or outside of the neuroma. An abnormal reflex action results which entails vasomotor disturbances at the periphery. Removal of the neuroma and resection of the sympathetic nerve fibers break up the reflex arc, and restoring the continuity of the nerve wards off further trouble.

Lyon Médical, Lyons

March 25, 1921, **130**, No. 6

*Gastric Ulcer in the Tuberculous. G. Aigrot and R. Gaillard.—p. 245.
Poisoning from Automobile Gases. C. Armand.—p. 288.

Gastric Ulcer in the Tuberculous.—Aigrot and Gaillard have found signs of pulmonary tuberculosis in a surprisingly large proportion of their gastric ulcer cases, and they urge giving the tuberculous the benefit of operative treatment the same as if they were not tuberculous, reporting four cases.

Nourrisson, Paris

March, 1921, **9**, No. 2

*Athrepsia in Infants. A. B. Marfan.—p. 65.
*Treatment of Spasmophilia. P. Rohmer and P. Vonderweidt.—p. 87.
Muscular Lesions in Choleriform Diarrhea. H. Sloboziano.—p. 96.
Melena in Syphilitic Infant. Lemaire and others.—p. 104.

Athrepsia in Infants.—Marfan describes in detail the clinical picture of hypothrepsia and athrepsia which has too long been obscured by inclusion of symptoms from the causal disease or from secondary complications. By excluding these he shows that the main feature of denutrition is the gradual disappearance of the subcutaneous layer of fat. In young infants almost all the fat in the body is found in this subcutaneous layer. By taking up a fold in the skin of the abdomen it is easy to estimate the degree of denutrition. With obesity and myxedema, the fold is very thick, and in advanced athrepsia the fold may be as thin as if merely of silk. After more or less complete disappearance of the fat there is usually a considerable loss of water, testifying to the complete disintegration of the tissues. The organs shrink and the findings are remarkably like those in animals dying from inanition. He points out that this is a feature which must be borne in mind in treatment. In all the cases of athrepsia he has encountered, only three children survived; one was breast fed, the other was restored to the breast, but the third recovered on cow's milk.

Treatment of Spasmophilia.—Rohmer and Vonderweidt give the details of twelve cases of severe spasmophilia in young children with recovery under systematic calcium chlorid treatment. In urgent cases they begin with 1 gm. calcium chlorid every hour until the effect is apparent, giving chloral also. After six hours they continue with 6 gm. calcium chlorid per day, plus 5 gm. of cod liver oil, with phosphorus, morning and evening. As a rule all the symptoms disappear the second day but the treatment should be kept up for ten or twelve days. Nine of the twelve children were cured by this means. In the three others there was some tendency to recurrence but all were improved. In one case notwithstanding the most rigorous treatment it was impossible to conquer the latent spasmophilia. They give anhydrous calcium chlorid in a 5 per cent. mucilaginous solution. The dose is 20 gm. flavored with a little raspberry syrup. They never saw any by-effects from this treatment, possibly owing to the adjuvant action of the phosphorus and the cod liver oil. In one case, the six months child seemed moribund from the violent, repeated convulsions, with arrest of respiration and heart action. After massage of the heart and artificial respiration, chloral was given and 6 gm. of the calcium chlorid hourly from 9 p. m. to 6 a. m.; then the cod liver oil and phosphorus, and there were no further convulsions after this for nearly two weeks. Then a mild convulsion ushered in pneumonia, but recovery was soon complete.

Paris Médical

March 26, 1921, **11**, No. 13

Cerium in Treatment of Tuberculosis. Grenet and Drouin.—p. 241.
*Diagnosis of Syphilis. P. Merklen, Devaux and Desmoulière.—p. 244.

Diagnosis of Syphilis.—"Syphilis may impair the functioning of various organs without direct symptoms from them,

and even with negative Wassermann reaction." . . . "The great danger from the Wassermann reaction is that we assume that a negative reaction implies the absence of syphilis. The Desmoulière cholesterin modification of the Wassermann technic is much more sensitive, and this may reveal the syphilitic basis of the asthenia, the anemia, ready fatigue, backward growth and development at puberty, the loss of mental balance, dystrophia, strabismus, ptosis, etc." The writers urge in conclusion not to be frightened away from the truth by the innumerable constant responses to the Desmoulière cholesterin serodiagnosis. "However high we estimate the proportion of persons with inherited or acquired syphilis, we yet will fall short of the truth."

Presse Médicale, Paris

March 26, 1921, **29**, No. 25

*Reconstruction of Upper Tibia. E. Juvara.—p. 241.
*Tardy Pain in Stomach Disease. F. Ramond.—p. 243.
*Dangers of Spinal Anesthesia. P. Guibal.—p. 244.
Physiology of the Kidney. L. Binet.—p. 246.

Reconstruction of Upper Tibia.—Juvara's illustrations show the resection of the upper third of the tibia and reconstruction of the bone with the anterior half of the lower third of the femur. The implant was cut long enough for the upper and lower ends to extend a short distance beyond the actual gap, and be fastened with wire to sound bone above and below. Five years after the resection for sarcoma, the young woman still wears a leather knee cuff and uses a cane, but is otherwise in perfect condition.

Pain with Stomach Disease.—Ramond explains why tardy pain in the stomach always is a sign of defective functioning or of inflammation of the pylorus. As long as the chyme protects the inflamed pylorus there is no pain, but as the chyme is expelled, the gastric juice comes in contact with it and pain results. Or if the pylorus refuses to open, the peristalsis seeking to force the chyme past this obstacle becomes so intense that it is painful.

Intraspinal Anesthesia.—Guibal was delighted with this method in his first 1,800 cases without a mishap, but in his latest series of 1,200 cases he had three cases of apnea, one with grave syncope, and one death. The apnea cases compelled artificial respiration for fifteen and seventy minutes and two hours and a half. The disturbances developed a few seconds after the injection.

Progrès Médical, Paris

Feb. 5, 1921, **36**, No. 6

Rehabilitation of the Disabled. P. Mauclaire.—p. 57.
Professional Secrecy. Garçon.—p. 59.
*Suppurating Inguinal Gland of Appendicitic Origin. Chifoliau and J. Humbert.—p. 61.

Inguinal Adenitis of Appendicitic Origin.—The case in the woman of 66 teaches that a suppurating gland in the inguinal region with a tumor in the iliac region may be explained by infection spreading by the lymphatics, against the current.

Feb. 26, 1921, **36**, No. 9

*Treatment of Gonorrhea. Cattier.—p. 89.
*Traumatism and Surgical Tuberculosis. A. Broca.—p. 91.
Diethylendiamin in Treatment of Uricemia. Pellissier.—p. 93.

Treatment of Gonorrhea.—Cattier cites Lebreton's study of the semen of persons supposed to be quite cured of gonorrhea. Fully 80 per cent. of those who had supposed themselves fully cured showed gonococci in the semen, examined within an hour. Cultivation of the seminal fluid is thus the best guarantee that the patient is or is not a carrier of gonococci. Cultivation of the secretions from the uterus at the beginning of menstruation may prove to be the best equivalent for this in women. Unsuspected gonococcus infection of the urethra in the wife is one of the most common causes of supposed "relapse" in the husband. He has had hundreds and hundreds of instances of this.

Influence of Trauma on Surgical Tuberculosis.—Broca relates some curious examples of the almost universal tendency to ascribe to some external cause every morbid phenomenon. The assumption of a traumatism as the cause of an infectious or specific lesion must never be accepted without the greatest reserve, and without ascertaining the previous condition, etc. The trauma may reveal the lesion for the first time, and the lesions are always aggravated by any trauma.

March 12, 1921, **36**, No. 11

*Suppurative Ependymitis. M. Loeper and J. Forestier.—p. 111.
*Cryology. Lortat-Jacob.—p. 112.
*Hyperhidrosis in Children. H. Jumon.—p. 114.

Suppurative Ependymitis of Mesocephalus.—The symptoms in the man of 42 had been ascribed to epidemic encephalitis by the attending and consulting physicians, but death the third week revealed an acute partial and purulent streptococcus meningitis restricted to the third and fourth ventricles.

Cryology.—Lortat-Jacob reviews the different ways in which very low temperatures can be found useful in the laboratory. Among other points, he mentions that freezing organs with liquid air or carbon dioxid snow allows the discovery of alcohol in the tissues after death. Also that the human cornea kept at 5 C. retained its vitality, and seven months after it had been transplanted into another eye, vision had improved to 1:10.

Hyperhidrosis in Children.—Jumon enumerates the different forms which hyperhidrosis may assume, and reiterates that its suppression is not dangerous for the child. Besides local, general and other measures, including vaccine and organotherapy, radiotherapy may prove effectual when all else fails. Sabouraud, Hutinel, Jeanselme and Noiré have reported cures after a single sitting.

Schweizerische medizinische Wochenschrift, Basel

March 24, 1921, **51**, No. 12

*The Crystalline Lens. A. Vogt.—p. 265.
*Antibodies. M. Neisser.—p. 268. Reply. H. Sahli.—p. 269.
*Quinidin as Heart Tonic. E. Jenny.—p. 272.
*Research on the Blood. E. Liebreich (Bucharest).—p. 275.

The Crystalline Lens.—Vogt discusses the spaces that develop in the senile lens, and the way in which these modify vision.

Antibodies.—Sahli's work on the origin and the nature of antibodies was summarized here, Jan. 29, 1921, p. 344. Neisser disputes some of his statements, and Sahli explains his theory more clearly, and reiterates that the production of antibodies is a secretion. As in practically all biologic processes, there is always excess of secretion beyond what is needed.

Quinidin for the Heart.—Jenny's experience confirms the way in which quinidin is able to arrest auricular fibrillation and restore the normal sinus rhythm. This occurred in eleven of Frey's twenty-two cases, in six of Bergmann's nine, and once in Klewitz' fifteen. In seventeen of Jenny's eighteen cases of auricular fibrillation and tachysystolia, the normal rhythm was restored by the action of quinidin. This took from 0.5 gm. to 15.5 gm. in different cases, and this effect was realized in from three hours to ten days. The pulse has kept regular since to date in most, but the longest interval is only five months. It may be necessary to give the drug continuously, or to repeat the courses. Jenny's results surpass all previously published. He gave 0.5 gm. of quinidin two or three times a day. The tranquilizing action of the drug has been found useful also in paroxysmal tachycardia and similar overexcitability. He says that up to 2 or 3 gm. a day need not be feared, under constant supervision, but at the slightest sign of derangement of vision or hearing the drug should be dropped.

Research on the Blood.—Liebreich announces that all factors which prevent coagulation prevent the appearance of eosinophil cells and of Charcot's crystals in the blood. Also that it is possible to cause large masses of eosinophil cells and Charcot crystals to appear in every specimen of extravasated blood, regardless of the previous proportions of eosinophils in the blood. His research has shown further, he says, that the eosinophil granules are the crystals of a substance which, when conditions are particularly favorable, crystallizes in the form we know as Charcot's crystals. Eosinophilia, he continues, is the result of an overproduction

of this eosinophil secretion and of its solvent, both of which participate in coagulation outside of the body. Eosinophilia may be the expression of some phenomenon of colloidoclasis as Widal uses the term. Charcot's crystals can be shown up in any blood by removal of the plasma and allowing the drop of blood to coagulate between slides. Among the facts which these assumptions explain is the sudden appearance of eosinophilia, as may occur in asthma. Also the local and general eosinophilia which may accompany considerable extravasation of blood that does not coagulate. Also the abundance of eosinophils and Charcot's crystals in myelogenous leukemia with its slow coagulation of blood.

Annali d'Igiene, Rome

November, 1920, **30**, No. 11 and Supplements

Typhoid Fever in Italy. V. Puntoni.—p. 665. Cont'd.
*Isolation of Tetanus Bacillus. C. Ninni.—p. 684.
Failure of Attempt at Transmission of Malaria to Monkey. E. Bertarelli.—p. 689.
*Blastomycosis of Axilla. L. Condorelli.—p. 691.
*Anopheles and Malaria. C. Fermi. Supplement.—pp. 1 to 158. Idem. Supplement.—pp. 1 to 32.
*Campaign Against Malaria in Rome District. B. Grassi and M. Sella. Supplement.—pp. 1 to 314.

January, 1921, **31**, No. 1

The Gastro-Enterotropism of Cholera Vibrios. G. Sanarelli.—p. 1.
Plurality of Rabies Virus. V. Puntoni.—p. 27.
Epidemic Encephalitis at Rome. G. Pecori.—p. 32.
Chronic Experimental Tetanus. C. Ninni.—p. 58.

Isolation of Tetanus Bacillus.—Ninni announces that it is not necessary to heat the suspected material to 80 C. to kill off other bacteria. Heating to 60 C. for an hour is ample for the purpose while this does not modify the toxicity of the tetanus bacillus.

Trichomycosis of the Axilla.—Condorelli has been able to find in the literature only one case (Waldeyer) that resembles the one he describes in his own person. It is a blastomycosis of the hairs in the axilla and he proposes for it the name trichoblastomycosis axillaris as it differs in certain respects from tropical trichomycosis nodosa. The mycosis was readily exterminated by 1 per thousand solution of mercuric chlorid.

Campaign Against Malaria in Roman District.—Grassi and Sella give an illustrated description of the means employed in the efforts to exterminate malaria at Fiumicino, and the results. Grassi has insisted until recently that quinin and tonics with screening and capture of mosquitoes are all that is necessary, but of late has abandoned this standpoint, urging the application of all measures. He discusses the epidemiology and the polymorphism of the malarial parasites, while Sella describes the biology of anopheles, and urges that malaria should come under the head of workmen's compensation when prophylactic measures have not been thoroughly applied. Fermi discusses the answer to 130 different problems of what he calls anophelology as he studied them at the hygiene institute of the University of Sassari.

Policlinico, Rome

March 21, 1921, **28**, No. 12

*Oral Auscultation. A. Lura.—p. 395.
Experiences with Ouabain. P. F. Zuccòla.—p. 401.
*Primary Syphilitic Chancre on Tonsil. D. Maselli.—p. 404.
Syphilitic Lesion in Cauda Equina. P. De Tommasi.—p. 406.

Auscultation at Open Mouth.—Lura distinguished a murmur by this means in four of 200 persons examined by oral auscultation. He interprets the instructive findings in these and other groups.

Syphilitic Chancre on Tonsil.—The bacteriologic findings were characteristic of Vincent's angina, but the ulceration on one tonsil resembled a chancre so perfectly that Maselli gave a tentative dose of neo-arsphenamin. The patient was a virgin of 25, and this treatment was followed by subsidence of the chancre and development of a typical syphilitic roseola.

March 1, 1921, **28**, Medical Section No. 3

Mechanism of Epinephrin Leukocytosis. A. Sanguinetti.—p. 97.
Acute Leukemia; Two Cases. P. F. Zuccola.—p. 116.
*Pernicious Anemia in Malaria. M. Coda.—p. 123.

Pernicious Anemia in Malaria.—In Coda's two cases the blood findings were typical of pernicious anemia, but the malarial parasite was found in the blood although there had long been no clinical manifestations. Under treatment of the malaria the anemia subsided, with no recurrence during the years since.

Riforma Medica, Naples

March 5, 1921, **37**, No. 10

*Malingering and Workmen's Compensation. D. Giordano.—p. 217.
Sarcoma of the Tongue. V. Aloi.—p. 219.
*Roentgen-Ray Treatment of Sarcoma. F. Sanvenero.—p. 221.
*Gas Cysts of the Intestines. P. F. Zuccòla.—p. 222.
*Local Treatment of Arthritis. G. Lampronti.—p. 225.
Etiology of Epidemic Encephalitis. G. Tarozzi.—p. 226.
Biologic Independence of the Metazoic Cells. G. Galeotti.—p. 227.
*Aneurysm of the Aorta. A. Ferrannini.—p. 228.

March 26, 1921, **37**, No. 13

Torsion of Omentum. D. Taddei.—p. 289.
Use of Tonsil Forceps in Dermatology. A. Fontano.—p. 292.
Latent and Chronic Amebiasis. III. G. Izar.—p. 292.
Computation of Dilutions in Serodiagnosis. E. Calendoli.—p. 294.
Asthma from Contact with Horses. E. Debenedetti.—p. 295.

Malingering and Workmen's Compensation.—Giordano describes cases in which the men tried to connect with an industrial trauma some old pathologic conditions.

Roentgen-Ray Treatment of Sarcoma.—Sanvenero witnessed the complete subsidence of a sarcoma in the wall of the chest under roentgen-ray treatment. The sarcoma was an ulcerating recurrence, and had developed rapidly and spread deep in the man of 30. The original sarcoma had been excised. There has been no trace of recurrence or disturbance of any kind during the six months since the exposures.

Gas Cysts of the Intestines.—Zuccòla's patient, a man of 31, died a few days after the laparotomy which had shown the intestines studded with gas cysts. The intestines and the peritoneum showed signs of inflammation. In the 46 cases of cystoid pneumatosis he has compiled, in 25 there was tuberculous peritonitis; in 7 benign processes in stomach and intestine; in 5 septic ulcerative processes; in 2 gastric cancer; in 2 ulceration and in 2 severe cholitis. In 21 cases in which the pneumatosis was a necropsy surprise, in 9 there was tuberculous peritonitis or lung disease or enteritis; in the others chronic kidney or heart trouble, and in 2 appendicitis. A very few have reported a complete cure with laparotomy alone, and Winands by treatment of the meteorism by puncture. In all the others no benefit was obtained, or the condition was aggravated.

Local Treatment of Arthritis.—Lampronti has been experimenting with different drugs injected directly into the joints in acute polyarthritis. The best results were obtained with 8 c.c. of a 3 per cent. solution of antipyrin injected directly into the joint. The local reaction is slight and there never was suppuration, but the temperature drops in a few hours while the pain ceases at once as if by magic. The absorption of the edema around the joint rapidly follows. It sometimes seems as if the arthritis fled before the drug, the benefit in one joint being followed by aggravation in another, so he usually distributes about 12 c.c. among the other joints. He never gives over 20 c.c. during the twenty-four hours. His formula is 1.5 gm. of antipyrin with 46 gm. distilled water. After sterilizing in the water bath, he adds 4 gm. of 1 per thousand epinephrin solution.

Aneurysm of Aorta.—Ferrannini reviews the pioneer work of the Italians in respect to aneurysms of the aorta. The name of Cardarelli is especially associated with cardiosystolic pulsation in the larynx and trachea as a sign of aneurysm in the aorta.

Rivista Critica de Clinica Medica, Florence

Jan. 5, 1921, **22**, No. 1

*Banti's Disease. G. Garin.—p. 1. Conc'n in No. 2, p. 13.

Feb. 25, 1921, **22**, No. 6

Cirrhosis of Liver of Hanot Type. Satta.—p. 61. Begun, No. 3, p. 25.

Banti's Disease.—Garin describes with necropsy findings a case of typical Banti's disease in a man of 67 who had been

under observation for eleven years, in consultation with Professor Banti himself. Garin thinks that syphilis, tuberculosis and alcoholism can be certainly excluded in this case as causal factors, although acute miliary tuberculosis was responsible for the patient's death the eleventh year of the Banti set of symptoms. The testimony seems to favor some primary infection localizing in the spleen, permanently injuring its structure and function after the infectious process had died out. The toxins generated by the abnormal metabolism in the spleen are responsible for the further injury of the spleen and of organs directly connected with its circulation, the liver in particular. Cirrhosis of the liver occurred early in the course, although the ascites did not develop until nine years later. There was no hemorrhage at any time, and even at the tenth year there were 3,500,000 erythrocytes and 40 per cent. hemoglobin. Arsenical treatment with a few exposures of the spleen to the roentgen rays may have aided in attenuating the disease. The patient would not allow splenectomy which Garin urged from the first.

Rivista di Patologia Nervosa e Mentale, Florence

Jan. 15, 1921, **25**, No. 7-8

*Pathologic Anatomy of Dementia Praecox. V. M. Buscaino.—p. 197.
*Inherited Neurosyphilis. P. Ciuffini.—p. 226.

Pathology of Dementia Praecox.—In five cases of dementia praecox, the fundamental changes were of a degenerative nature. The differences found in the paranoid and the catatonic types confirm that the striate body has something to do with catatonia.

Inherited Syphilitic Disease of the Nervous System.—Ciuffini warns, from 5 cases described, that cerebral arteritis from inherited syphilis may develop with an onset like that in the acquired disease, and the course may be the same. In 8 other cases, headache was the main symptom of neurosyphilis: in half in this group it was the only appreciable symptom. The headache came on or was worse in the evening or night, and was usually located in the brow or vertex, frequently accompanied by vomiting. In another group of 8 children, epileptiform convulsions were the first manifestation of the neurosyphilis, and mercury and iodid treatment permanently arrested the convulsions. He encountered a total of 33 cases of nervous disease from inherited syphilis among the 20,000 applicants at the Rome neurologic clinic and dispensary, that is, 1:175, not including hydrocephalus cases. The list includes a few cases of sclerosis in patches, tics, radiculitis, Little's disease, psychasthenia, and other nervous and mental disturbances. Success beyond all anticipations is the rule when treatment is begun early and kept up perseveringly and repeated. The details of the total 33 cases are given.

Anales de la Facultad de Medicina, Montevideo

1921, **5**, No. 11-14

*Conservative Obstetrics. A. Peralta Ramos.—p. 581.
*Autoserotherapy of Infections. E. Escomel.—p. 604.
Teaching of Hygiene. E. Paz Soldán.—p. 618.
*Calculi in the Pancreas. A. Navarro.—p. 627.
Chronic Obstruction of the Duodenum. A. Navarro.—p. 641.
*Operations for Traumatic Epilepsy. D. Prat.—p. 660.
The Diagnosis in Psychiatry. S. C. Rossi.—p. 676.
Tuberculin Therapy. E. Claveaux.—p. 682.
*Slight Fevers. R. Schiaffino.—p. 694.
Aneurysm of Abdominal Aorta. F. Abente Haedo.—p. 712.
*Phrenic Reaction in Gynecology. C. Stajano.—p. 722.

Progress in Conservative Obstetrics.—In this address as exchange professor at Montevideo, Peralta Ramos said that in his seventy-three cases of puerperal infection in the last six years, of the type of common endometritis, treated by abstention, there was only one death from septicemia, and in this case no active measures could have been successful. He is convinced that Nature has plenty of measures for defense in common cases of infection.

Autoserotherapy of Infections.—Escomel recalls that each individual has his special saprophytes and special defenses, forming a personality in this respect as distinct as his external personality. His serum is polyvalent, and the whole serum should be used in autogenous therapy. Escomel's experience has been remarkably favorable with this, injecting 1 or 10 c.c. of the patient's own serum, heated to 56 or 58 C. Among the cases cited to show the prompt and durable benefit is one of intense acute gonorrhea in an old syphilitic; one of extreme prostration and joint pains in the secondary phase of syphilis acquired at the age of 68, and another of acute gonorrhea reinfection. The heating destroys the thermolabile toxins and may attenuate the others. He adds that this autoserotherapy is free from all the drawbacks of other forms, and is applicable in all infections of known and unknown nature.

Calculi in the Pancreas.—The tertipara had recurring jaundice and pains suggesting gallstones, but the tenderness and dull ache corresponded to the pancreas, and the pulse grew slower and weaker with pressure on the pancreas. Three calculi were removed from the pancreas, and the gallbladder, containing others, was also removed. The health has been perfect during the four years since. The pain was referred to the kidney in some cases on record; in others regular tardy pains simulated pyloric ulcer. In almost all cases there is a history of vague gastric symptoms before the colics develop.

Jacksonian Epilepsy.—In two of the five operative cases described, trauma was responsible but in the others the cause was a chronic inflammatory process, possibly of syphilitic origin in one. Prat operated under local and regional anesthesia at a single sitting, and the immediate results were brilliant and there has been no recurrence in four of the cases up to five years since; one has had a few mild symptoms but the earning capacity is not impaired.

Slight Fever.—In examining women for the teacher's certificate, Schiaffino found about 40 per cent. with temperature slightly above normal; the proportion in the men was less. In the majority the temperature was found normal on reexamination a few months later. His practice is to allow the subjects to continue to teach, reexamining them every two or three months if nothing to explain the *febricula* can be found. A new candidate with it is obliged to present evidence that teeth, nose and throat are in apparently perfect condition, and the certificate is not granted until repeated examinations have failed to disclose any cause for the slightly abnormal temperature.

Phrenic Reaction in Gynecology.—Several cases are described to illustrate the frequent occurrence of symptoms in the upper abdomen from possibly unsuspected disease in the adnexa. Stajano never has witnessed actual subphrenic suppuration, but the phrenic reaction often dominated the clinical picture in gonococcus infection and in puerperal lymphangitis.

Revista Española de Medicina y Cirugía, Barcelona

February, 1921, **4**, No. 32

Arthritic Atrophy of Muscle. L. Barraquer.—p. 63.
*Abdominal Arteriosclerosis. F. Fernández Martínez.—p. 69.

Abdominal Arteriosclerosis.—Fernández Martínez remarks that obliteration of some mesenteric artery should be suspected when there is paroxysmal pain in the abdomen, with bloody vomit and stools. Accompanying ileus sustains this assumption, with or without a tumor. He describes a case in which only the necropsy cleared up the diagnosis. The first symptom had been sudden agonizing pain near the umbilicus, accompanied by incessant vomiting, both rebellious to all measures. The pain became diffuse but persisted intense. The diagnosis was peritonitis from perforation of a gastric ulcer, but death ensued the thirty-sixth hour as the man was being prepared for a laparotomy. Necropsy revealed obliteration of a group of mesenteric arteries.

Semana Médica, Buenos Aires

Feb. 24, 1921, **28**, No. 8

Vaccine for Whooping Cough. G. B. Cavazzutti.—p. 213.
Some Derivatives of Nicotin. J. A. Sánchez.—p. 217.
Experimental Sympathetic Ophthalmia. P. B. Ferro.—p. 220
*The Abdominal Sympathetic Syndrome. J. A. López.—p. 242.

The Abdominal Sympathetic Syndrome.—López discusses a set of symptoms in young soldiers which suggest suprarenal deficiency. Their prompt and complete subsidence under

epinephrin treatment confirms this origin. The more or less subjective train of symptoms had developed after influenza, pneumonia or gonorrhea, or extreme worry or emotional stress—all liable to depress suprarenal function. The symptoms were constipation, oppression in the epigastric region after eating, abdominal pains and sometimes vomiting.

Zeitschrift für Kinderheilkunde, Berlin

1920, **27**, No. 3-4

*The Lymphocytosis of Pertussis. R. Hess.—p. 117.
*Bone Changes After Scurvy. Helene M. Frank.—p. 127.
*Macrogenitosomia Praecox. M. Ambrozic and H. Baar.—p. 135. Idem. H. Baar.—p. 143.
Histology of Skin of the Newborn. E. Slawik.—p. 153.
Czerny's Butter-Flour Mixture for Infants. Klotz.—p. 161.
*Spinal Auscultation of Bronchial Glands. K. Klare.—p. 169.
*Measles Convalescents' Serum. R. Degkwitz.—p. 171.
*Glycemic Reaction in Infants. F. Goetzky.—p. 195.
*The Thyroid in the Young. E. Schlesinger.—p. 207.

The Lymphocytosis of Whooping Cough.—Hess tabulates the differential blood count before and after the paroxysms in a number of cases of whooping cough. The physical stress of the paroxysm forces leukocytes, and especially lymphocytes, out into the blood stream.

Persisting Changes in Bones After Scurvy.—In eight of thirteen cases of clinically cured scurvy in infants from 7 to 12 months old, Frank found on reexamination from one to seventeen months later that the bones still showed the effects of the disease. Abnormal conditions were found in the epiphyses and periosteum and one femur was shorter in some of the children. The pathologic changes disappeared in a few in time; in others they persisted, and nearly all the infants had rachitis.

Macrogenitosomia Praecox.—The girl of 3 was a head taller than other children of her age and the external genital organs were unusually large, and covered with hair. An abdominal tumor proved to be an epithelial cancer of the left suprarenal. This is the twentieth case on record of a suprarenal tumor with macrogenitosomia praecox confirmed by necropsy. There were only three boys in the list. In Baar's case of macrogenitosomia praecox a tendency to cerebellar ataxia and the exceptional size of the external genitals in the girl of 5, and her general precocious development suggest by exclusion pathologic conditions in the pineal gland. All previous known cases were in males. Baar compares this case with the literature on pathology of the pineal gland.

Auscultation of Spine in Diagnosis of Tuberculous Glands.—Klare declares that auscultation of the vertebrae is the most reliable method for confirming the diagnosis of pulmonary tuberculosis in children. Comparison of all the findings has shown in his extensive experience that bronchophony, while the spine is ausculted, and roentgenography yield the most reliable testimony. Enlargement of the bronchial glands always increases bronchophony with the whispered voice. This is d'Espine's sign, and when it is pronounced up to the fifth or sixth thoracic vertebra in a child of 8, roentgenography will usually prove a guide to treatment. But with a child of 12, and bronchophony only to the third thoracic vertebra, we can be confident that the bronchial glandular process is slight and inactive. Every child with pronounced bronchophony over the upper thoracic spine always showed a heavy roentgen shadow in the hilus.

Preventive Serotherapy in Measles.—Degkwitz now has a record of 172 cases in which convalescents' serum was injected in children who had been exposed to measles from two to six days before, and none of them developed the disease while all the untreated children did. The effects were as prompt and reliable in institutions as in the home, even in foundlings' asylums. After the sixth day, the effect is less certain, and by the eighth day, the seroprophylaxis always failed. Injection of adults' serum does not prevent the disease but notably attenuates it, and Degkwitz queries whether it may not be an advantage to acquire immunity in this way. The success was complete with convalescents' serum that had been kept up to nine months. Serums that had been kept for four months, both in fluid and desiccated form, were frequently used. He urges extensive use of convalescents' serum, not in the expectation of eradicating the disease—the supply of serum would not permit this—but in the certain anticipation of postponing the measles until the children are over 6. He discusses ways and means how convalescents' serum could be best procured. In conclusion he adds that experiments along this line with scarlet fever convalescents' serum have yielded very encouraging results. The prospects are that the disease can be warded off, after exposure, by injection of 5 or 6 c.c. of serum from a scarlatinal convalescent from fourteen to twenty days after defervescence. Attempts with pertussis convalescents' serum have also been encouraging. Degkwitz' work was done under a grant from the *Münchener medizinische Wochenschrift*, at the Munich children's clinic.

Glycemia in Infants.—Goetzky found the glycemia curve after a test meal an index of the carbohydrate intermediary metabolism. By this means we can distinguish between seemingly identical toxic conditions, and obtain a guide for treatment. The test is made with 2 or 3 gm. of grape sugar per kg., given in a 5 or 10 per cent. solution. In health, the sugar content of the blood runs up to a sharp peak in half an hour but drops back again in another hour. In toxicosis, it runs up more gradually, taking three hours to reach 0.264 per cent., or the curve may slowly climb to 0.18 per cent. in two hours and take two more hours to drop even to 0.135 per cent. This delayed rise is never noted in pure dyspepsia and in "decomposition," nor in the grave condition from lack of adequate carbohydrates which sometimes deceptively resembles toxicosis. He gives curves from 10 of his 47 cases.

Goiter in the Young.—Schlesinger states that in a region where goiter is endemic, the new-born often show transient hyperplasia of the thyroid but it subsides in a few months. A second wave sets in at the age of 6 or 7 in girls, 9 in boys, and reaches its height before or during puberty. About a sixth of the boys and youths and a third or more of the girls show cardiovascular disturbances. The growth and development of the children with this hyperthyroidism are usually in advance of their years, both physically and mentally, and curvature of the spine is more common in them, and pronounced myopia.

Norsk Magazin for Lægevidenskaben, Christiania

March, 1921, **82**, No. 3

*Addison's Disease in Child. K. J. Figenschau and J. H. Berner.—p. 161.
External Pseudohermaphrodite. J. Holst.—p. 177.
*The Weight of the New Born. T. Frølich.—p. 182.
*Aseptic Purulent Meningitis in Uremia. O. Bang.—p. 195.
*Urobilinuria in the Pregnant. S. K. Mørdre.—p. 202.

Addison's Disease in Child.—At necropsy of the girl of 4 who had presented symptoms of Addison's disease, the left suprarenal gland was found transformed into a ganglioneuroma with some small metastatic tumors nearby. The diagnosis during life had been tuberculosis of the abdomen. Although the abdomen was much distended no ascites was found, the large tumor weighing 50 gm. In connection with this case, forty of ganglioneuroma from the literature are tabulated, including seventeen cases in children. In all, the tumor had developed from the sympathetic nervous system and the suprarenal. In another group of thirteen cases, including one child, the ganglioneuroma had developed in the brain, spinal cord or cerebrospinal nerves.

Weight of Young Infants.—The composite curves from 233 infants are given, showing the changes in weight during the first months. The list includes twenty-nine artificially fed.

Aseptic Purulent Meningitis in Uremia.—Bang reports two cases of purulent meningitis which seemed to be aseptic. It had developed in a man of 40 and a woman of 60 with uremia, in the course of chronic or acute kidney disease, with fatal outcome in both. In the woman the symptoms had suggested a focus in the brain, but nothing could be found at necropsy. In the man there were no convulsions and the blood pressure was comparatively moderate, but vomiting was frequent and there was headache.

Urobilinuria in the Pregnant.—Mørdre investigated for urobilinuria twenty nonpregnant healthy women and 139 pregnant. His conclusion from his research is that urobilinuria is of little practical importance in estimating conditions in a pregnancy.